EPIDEMIOLOGICAL ANALYSIS OF 1000 CASES OF PRETERM LABOR TO ASSESS THE RISK FACTORS AND OUTCOME

AND

TO EVALUATE THE SIGNIFICANCE OF VAGINAL INFECTIONS IN UNEXPLAINED PRETERM BIRTHS.

Dissertation Submitted for

M.D. (BRANCH – II)

OBSTETRICS AND GYNAECOLOGY

Institute of Obstetrics and Gynaecology

Madras Medical College

The Tamilnadu Dr. M.G.R. Medical University

Chennai

March 2007

ACKNOWLEDGEMENT

I gratefully acknowledge and sincerely thank **Prof. Dr. Kalavathy Ponniraivan, BSc., MD., Dean,** Madras Medical College, Chennai – 600 003, for granting me permission to utilize the facilities of this institution for this study.

I am extremely grateful to our Director and Superintendent, **Prof. (retd.) Dr. V Madhini, MD, DGO, MNAMS,** Institute of Obstetrics and Gynecology, Chennai, for her guidance and encouragement given in completing my work.

I thank **Prof. Dr. K Saraswathy, MD, DGO**, Deputy Superintendent, Institute of Obstetrics and Gynecology, Chennai for her valuable support.

I am also extremely grateful to Prof. **Dr. T Radhabai Prabhu**, **MD, DGO, MRCOG**, Chief Family Planning Dept., Institute of Obstetrics and Gynecology, Chennai for her valuable guidance and support throughout my study.

I am also extremely grateful to **Prof.Dr. Mohammad Meeran, MD,** Department of Microbiology, Institute of Child Health, Chennai, for permission to use the facilities in the department needed for my study and for his valuable guidance.

I am also grateful to **Dr. Umadevi, MD,** Asst. Prof, Department. of Microbiology, Institute of Child Health, Chennai for help and support in the completion of this study.

I am also grateful to **Prof. Dr. N. Saraswathy, MD, DCH**, Dept. of Neonatology, Institute of Obstetrics and Gynecology, Chennai, for permission to use records of the Preterm Unit.

I am also extremely grateful to all my professors and assistant professors for their encouragement and guidance.

I thank all the technicians of the Dept. of Microbiology, Institute of Child Health, Chennai, for their help with collection of microbiological data.

Last but not the least, I am thankful to all the patients who readily consented and cooperated in the work.

BONAFIDE CERTIFICATE

This is to certify that the study entitled **"EPIDEMIOLOGICAL ANALYSIS OF 1000 CASES OF PRETERM LABOR TO ASSESS THE RISK FACTORS AND OUTCOME AND TO EVALUATE THE SIGNIFICANCE OF VAGINAL INFECTIONS IN UNEXPLAINED PRETERM BIRTHS"** is the bonafide work done by **Dr.TINU ZACHARIAH,** at the Institute of Obstetrics and Gynecology, Government Hospital for Women and Children attached to Madras Medical College, Chennai, from 2004-2007 under the guidance of **Prof. Dr. Radhabai Prabhu , MD, DGO, MRCOG.**

This dissertation submitted to Dr. M.G.R. Medical University is in partial fulfillment of the University rules and regulations for the award of M.D. Degree in Obstetrics and Gynecology.

Director and Superintendent
Institute of Obstetrics and Gynecology
Madras Medical College
Chennai - 600 008.

Prof. Dr. T.Radhabai Prabhu
MD, DGO, MRCOG

Dean
Madras Medical College
Chennai – 600 003

CONTENTS

INTRODUCTION

Preterm birth (delivery before 37 completed weeks) is a major contributor of neonatal mortality and morbidity. The term is used interchangeably with premature birth.

The worldwide incidence of preterm labor ranges from 7% -11%. About two thirds of these occur between 34 and 37 weeks. In India an ICMR study in 1990 showed the incidence of preterm labor as 10% -15%. The rate of preterm birth has steadily increased over the past two decades[70].

There are about 13 million preterm births every year worldwide. The Perinatal Research Centre reports that 250 preterm babies are born every ten minutes. One out of every ten women has a risk of preterm birth.

Despite advances in perinatal medicine in recent decades, preterm delivery continues to pose a challenge to both the obstetrician and the neonatologist. Preterm birth contributes to 75% of all perinatal deaths [40, 72]. When lethal anomalies are excluded 85% of neonatal deaths occur in preterm babies. Prematurity accounts for half of the long term neurological morbidity in childhood[40] and the amount of material, effort and money spend on these are enormous.

Of all preterm deliveries 70% occur following induced or spontaneous labor associated with obstetric complications (such as preeclampsia, fetal anomalies, abruptio placenta, preterm premature rupture of membranes). The incidence of spontaneous, unexplained otherwise uncomplicated preterm labor is only 2-3% of all births [49].

With continued research into the etiology of the condition, growing evidence suggests that infection is a possible cause in 40% cases [90]. Preterm labor must either be a physiological process occurring too early in pregnancy or a pathological process as a result of an abnormal signal such as infection. Though genito-urinary infections are mainly implicated, acute infections involving distant organ systems have been shown to be capable of ultimately targeting the fetal-placental unit.

The steady rise in preterm labor is mainly due to increased number of multiple pregnancies which occurs as a result of the increasing use of Assisted Reproductive Techniques. Nearly 57% of all twin pregnancies and 92% of triplets result in preterm delivery [92].

A wide spectrum of causes and demographic factors has been implicated in the birth of preterm infants. Still the mediating factors that

connect underlying epidemiological or medical risk to immediate cause of preterm birth

are poorly understood. Research is ongoing to better delineate these potential mediating factors.

The controversy surrounding preterm labor is an ongoing one. Keeping the above scenario in mind the present study was undertaken.

AIMS OF THE STUDY

The study was done in two phases. The objectives of the first phase were to:

1. Study the epidemiology of preterm labor.

2. Study the perinatal morbidity and mortality associated with preterm labor.

The objectives of the second phase were to:

1. Study the association of vaginal infection in unexplained preterm labor.

2. Study the outcome of pregnancy in preterm labor associated with infection.

REVIEW OF LITERATURE

Prematurity was the term applied earlier to refer to infants with birth weight under 2500 gm. The drawback of this definition was that many infants born with birth weight below 2500 gm showed evidence of maturity whereas some babies more than this weight at birth were seen to be developmentally immature.

It has been observed that neonatal morbidity and mortality are primarily influenced by gestational age and less so by birth weight. There has therefore been a change in the definition of preterm labor and is now based on the gestational age of the neonate.

Definition: Preterm labor is defined as the onset of labor before thirty seven completed weeks of gestation (or 259 days).

The American Academy of Pediatrics and the American College of Obstetricians and Gynecologists (1997) proposed the following criteria to document preterm labor:

1. Contractions of four in 20 minutes or eight in 60 minutes plus progressive change in the cervix.

2. Cervical dilatation greater than 1cm.

3. Cervical effacement of 80% or greater.

INCIDENCE OF PRETERM LABOUR:

The worldwide incidence of preterm labor is 7% -11%. The incidence varies in various studies [5].

Study	Year	Place	Incidence
Butler et al	1963	Edinburgh	3.4%
Wynn and Wynn	1970	East Germany	3.3%
Rush et al	1976	England	5.1%
Cavitis et al	1979	USA	9.8%

P.K.Devi	1980	India	12-18%
Dutta	1992	India	5-10%
Dawn	1992	India	16%
Srigos et al	1996	Australia	15.5%

Although there are many conditions that lead to preterm delivery, they can be put into three main categories:

1. Complications of pregnancy that severely jeopardize fetal and maternal health often mandate preterm delivery. These medically indicated or iatrogenic causes represent 25% of preterm births.

2. Preterm premature rupture of the fetal membranes (PPROM) which is followed by preterm delivery, causes approximately 25% preterm births.

3. Spontaneous preterm labor with intact membranes accounts for 50% of preterm births.

1. MANDATED (INDICATED) PRETERM DELIVERY

Certain pregnancy complications require a clinical decision to effect preterm delivery rather than continue pregnancy in a deteriorating intrauterine environment. The most common indications being[75, 76]:

(a) Pre eclampsia (50%)

(b) Fetal distress (25%)

(c) Severe diabetes mellitus

(d) Intrauterine growth retardation

(e) Abruptio placenta

(f) Fetal death

(g) Multiple pregnancies

According to some studies, the neonatal outcomes were similar for preterm delivery occurring due to indicated causes and those occurring spontaneously [54]. But others show higher perinatal mortality when the preterm delivery is indicated [52].

2. PRETERM PREMATURE RUPTURE OF MEMBRANES (PPROM)

In only 7% of cases of PPROM is delivery delayed beyond 48 hours or more after the rupture of membranes [20, 81]. The time period from the rupture of membranes to delivery is inversely proportional to the gestational age at which the rupture of membranes occurs [12].

Intrauterine infection is one of the major predisposing events for PPROM[77]. The incidence of chorioamnionitis in PPROM is 30% and the reported incidence of neonatal sepsis in such babies is only 2-4%[93].

The pathogenesis of PPROM relates to increased apoptosis of the cellular components of the fetal membranes[28] as well an elevation in specific proteases in the membrane and amniotic fluid. The matrix metalloproteinases (MMP) MMP- 2, MMP -3, MMP-9 which are involved with normal tissue remodeling and degradation of collagen are found in higher concentrations in amniotic fluid from pregnancies with PPROM [83]. Several of the tissue inhibitors

of matrix metalloproteinases (TIMOS) are found in lower concentrations in amniotic fluid from women with PPROM.

3. SPONTANEOUS PRETERM LABOR

Among the more common associations are:

(a) Intrauterine infection (47%)

(b) Placental abruption, praevia (40%)

(c) Immunologic factors (33%)

(d) Uterine factors (Anomalies, polyhydramnios) 20%

(e) Multiple pregnancies (20%)

(f) Cervical incompetence (17%)

(g) Maternal factors (Systemic infection, preeclampsia) 10%

(h) Fetal anomalies (7%)

(i) Trauma (Surgical, others) 3%

(j) True idiopathic preterm labor (1%)

These disorders cause about half of the spontaneous preterm deliveries and their relative contribution varies between populations. Often two or more factors may co-exist in a patient.

Any acute illness in the mother like acute septic fever, acute pyelonephritis, diarrhea, dysentery, malaria can also trigger preterm labor. Chronic diseases

such as hypertension, nephritis, diabetes, heart disease and severe anemia in the mother can also predispose to preterm labor.

PREDISPOSING FACTORS FOR PRETERM LABOR

1. Maternal age: Very young and advanced maternal ages are associated with increased risk of preterm labor[30].

   The incidence at 15 yrs of age - 15.8%
   45 - 49 yrs - 9.9%
   24 - 29 yrs - 6%

2. Parity: Multiparous women are more prone for preterm labor than primigravidas.

3. Occupation: Occupations that involve prolonged walking or standing, strenuous working conditions, and long weekly work hours leading to physical fatigue predispose to preterm.Travelling long distances is also a risk factor for preterm delivery. But moderate exercise is associated with three-fold decrease in preterm birth [63].

4. Socioeconomic status: There is a strong association between low socioeconomic status and preterm labor and low birth weight babies. This is a consequence of the lower income, poor nutrition, low education level and more physical work.

5. Prenatal weight gain: Inadequate maternal weight gain during pregnancy is associated with higher chance for preterm birth [42].

6. Smoking: Smoking was associated with 2-5 fold increased risk of preterm premature rupture of membranes and 1.2 to 2 fold increased

risk of preterm delivery[6]. Smoking during pregnancy stimulates catecholamine release and the release of adrenocorticotropic hormone (ACTH) [84]. High levels of 3-methoxy 4-hydroxy phenyl ethylene glycol, a catecholamine metabolite, were detected in the amniotic fluid of smokers when compared to non-smokers [94]. Since there is no transplacental passage of catecholamines, this high metabolite concentration in amniotic fluid reflects the increased catecholamine production in the fetus.

7. Coitus: Earlier, abstinence during early pregnancy was advised to prevent

preterm birth but now studies show that coitus during early pregnancy is

not associated with an increased risk of recurrent preterm delivery. But

there is an association between increasing number of sexual partners in a

women's lifetime and recurrent preterm delivery [100].

8. Physical abuse: There is a significant rise in the incidence of preterm labor in women injured by physical abuse [80].

9. Psychological stress. Both stress and higher levels of maternal serum cortisol have been associated with spontaneous preterm birth[16, 78]. However, maternal depression was not associated with preterm birth [71].

10. Prior preterm birth: Prior preterm delivery strongly correlates with subsequent preterm labor. The risk of recurrent preterm was increased three fold compared with that of women who had a previous term delivery[8].

Outcome	**Risk of birth = 37 wks (%)**
First birth > 35 weeks	5%
First birth ≤34 weeks	16%
First and second births ≤ 34 weeks	41%

70% of these recurrent births occurred within 2 weeks of the gestational age of the prior preterm delivery. The cause of the prior preterm delivery also recurred.

11. Threatened abortion: Vaginal bleeding in early pregnancy is associated with increased adverse outcomes. Both spotting and heavy bleeding were associated with preterm birth [99].

12. Induced abortion: Women with history of induced abortions have 50% higher risk of having a very preterm delivery than women who have not aborted [102]. One prior induced abortion increases the risk by 55%.When there are two prior induced abortions the risk increases about 146% [64].

MATERNAL -FETAL STRESS AND PRETERM BIRTH

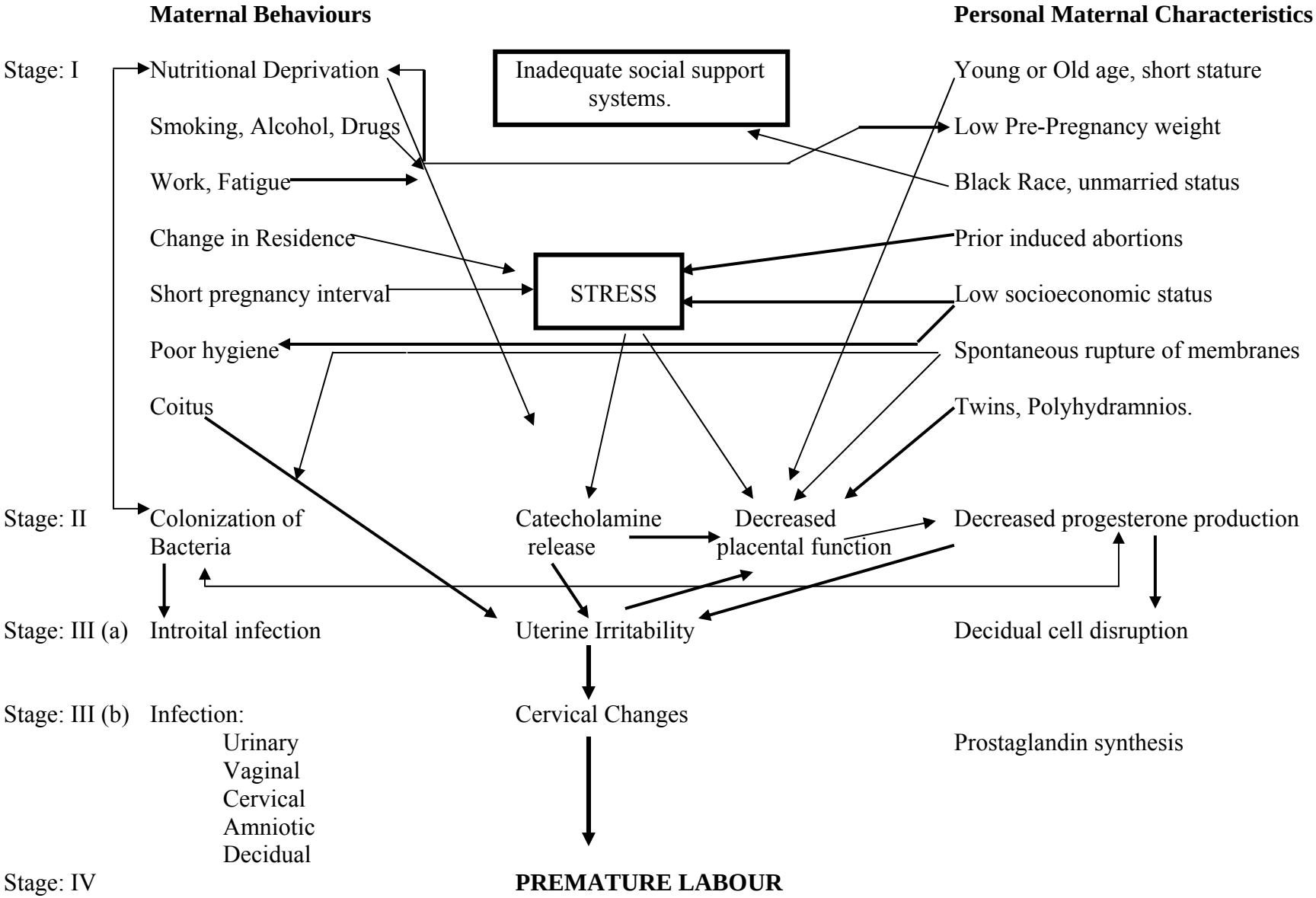
The actual process of preterm labor is a final step – one that results from premature uterine activation that was initiated weeks before the onset of labor.

Omer and Everly in 1988 described events leading to preterm birth as a disorder of arousal" or “hyperactivity of the limbic circuit" [82].

Women who experience stress early in pregnancy experienced a higher incidence of preterm birth. Bragonier et al (1984) proposed a hypothesis whereby maternal stress was the central mechanism leading to a cascade of events leading to preterm labor [10]. A combination of maternal behaviors and personal maternal characteristics and an inadequate social support system increased the risk of preterm birth.

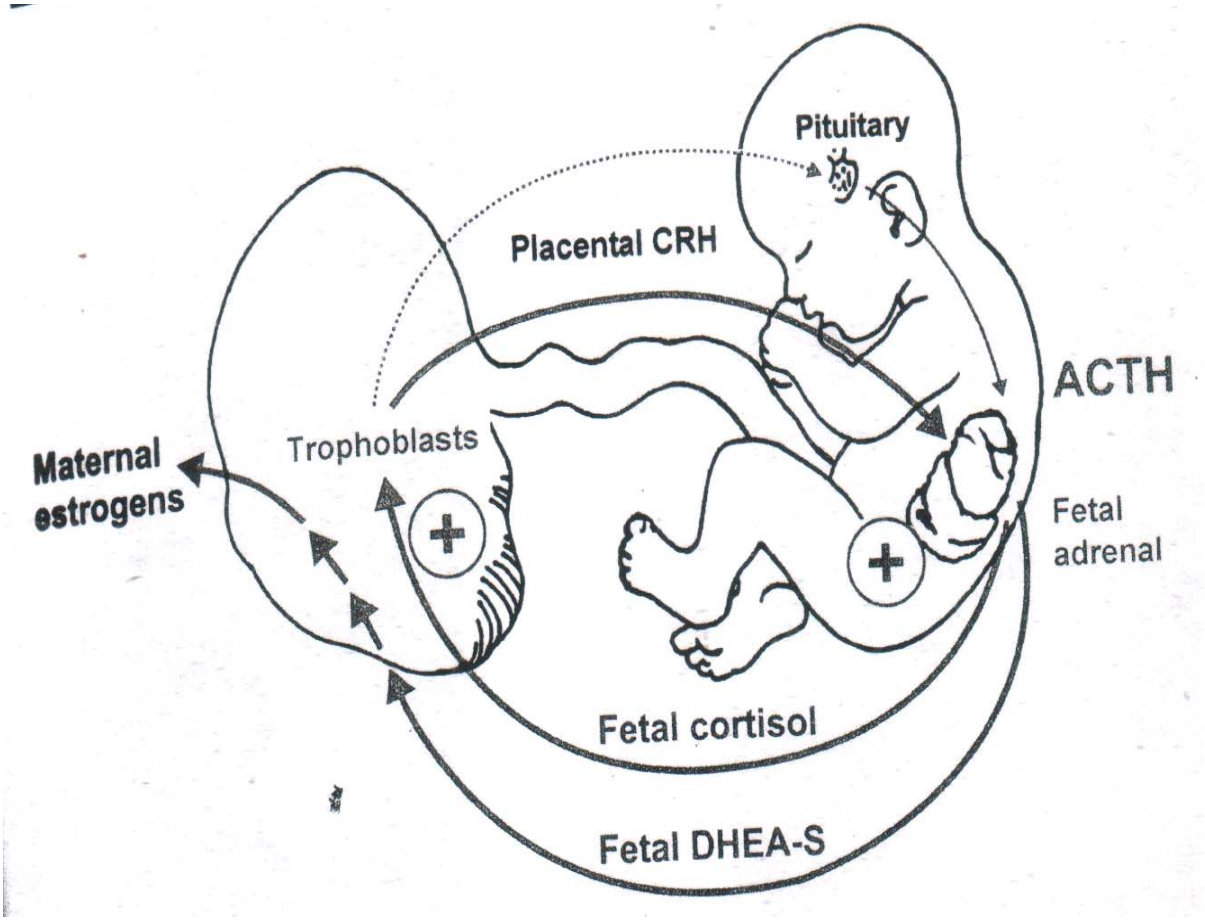
CAUSAL DIAGRAM FOR PREMATURITY

CASCADE OF EVENTS FROM MATERNAL BEHAVIOUR AND CHARACTERISTICS TO PRETERM BIRTH



Studies showing a correlation between maternal psychological stress and the placental - adrenal endocrine axis have provided a potential mechanism for stress induced preterm birth [61, 98].

The last trimester is marked by rising maternal serum levels of placental - derived Corticotropin - Releasing Hormone (CRH). Along with ACTH, it increases adult and fetal adrenal steroid hormone production, including the initiation of fetal cortisol biosynthesis. Rising levels of maternal and fetal cortisol further increase placental CRH secretion, which develops a feed - forward endocrine cascade that does not end until delivery.



The rising levels of CRH further stimulate fetal adrenal dihydroepi androsterone sulphate (DHEA – S) biosynthesis, which acts as a substrate to increase maternal circulating estrogens, particularly estriol.

In preterm labor, there is a premature rise in cortisol and estrogens leading to early loss of uterine quiescence [47, 66]. Women destined for preterm labor exhibit a rise in CRH two to six weeks earlier [74]. Early rise of serum estriol concentrations in women with subsequent labor is documented [41, 73] . This premature rise of estrogens will alter the myometrial quiescence and result in preterm labor.

The nature and variety of the stressors that activate this cascade are broad. Infection is an important stressor that prematurely activates the fetal hypothalamic - pituitary adrenal axis [37].

INFECTIONS AND PRETERM LABOUR

Bobitt and Ledger first suggested that unrecognized chorioamnionitis may be causally related to preterm labor [9]. Bacteria are recovered by transabdominal amniocentesis from as many as 20% of women in preterm labor without overt clinical infection and with intact fetal membranes[19].The earlier the onset of preterm labor, the greater is the likelihood of documented amniotic fluid infection[31].

It is estimated that as much as 40% of preterm labor may be caused by intrauterine infection, majority of which may be of subclinical variety. The incidence of chorioamnionitis and PPROM is more in patients with positive cultures than women with negative cultures [32]. They are also more likely to have neonates with complications [45] .

Sources for intrauterine infection

Microbes can gain access to the intramniotic cavity through

1. Ascending infection from vagina and cervix
2. Transplacental transfer of maternal systemic infection
3. Retrograde flow of infection from the peritoneal cavity via the fallopian tubes.
4. By accidental introduction at the time of intrauterine procedures.

Of these the ascending route of infection is the most common pathway. Gonclaves and co-workers (2002) categorized intrauterine infection into four stages [32].

Stage 1 (Bacterial Vaginosis)

The first stage is excessive growth of organisms in the vagina (bacterial vaginosis) and cervical canal.

Stage 2 (Decidual infection)

Once they gain access to the intrauterine cavity they reside in the decidua leading to deciduitis and further extension to chorionitis.

Stage 3 (Amniotic infection)

The organisms invade the fetal vessels or proceed through amnion into the amniotic cavity.

Stage 4 (Fetal systemic infection)

Once in the amniotic cavity the bacteria invade the fetus by different ports of entry.

A localized infection in the choriodecidual junction may lead to rupture of membranes.

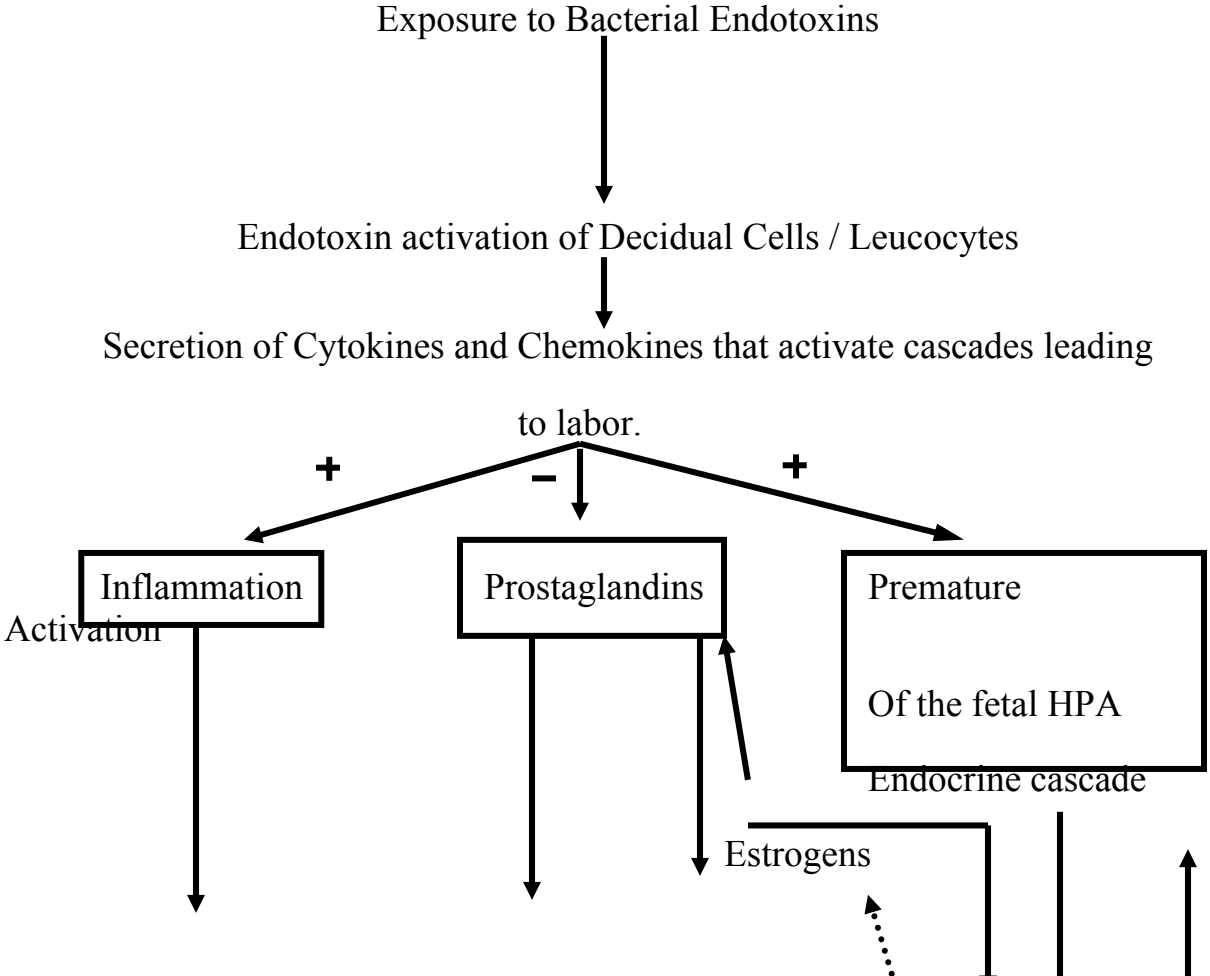
PATHOGENESIS OF INFECTION INDUCED PRETERM LABOR:

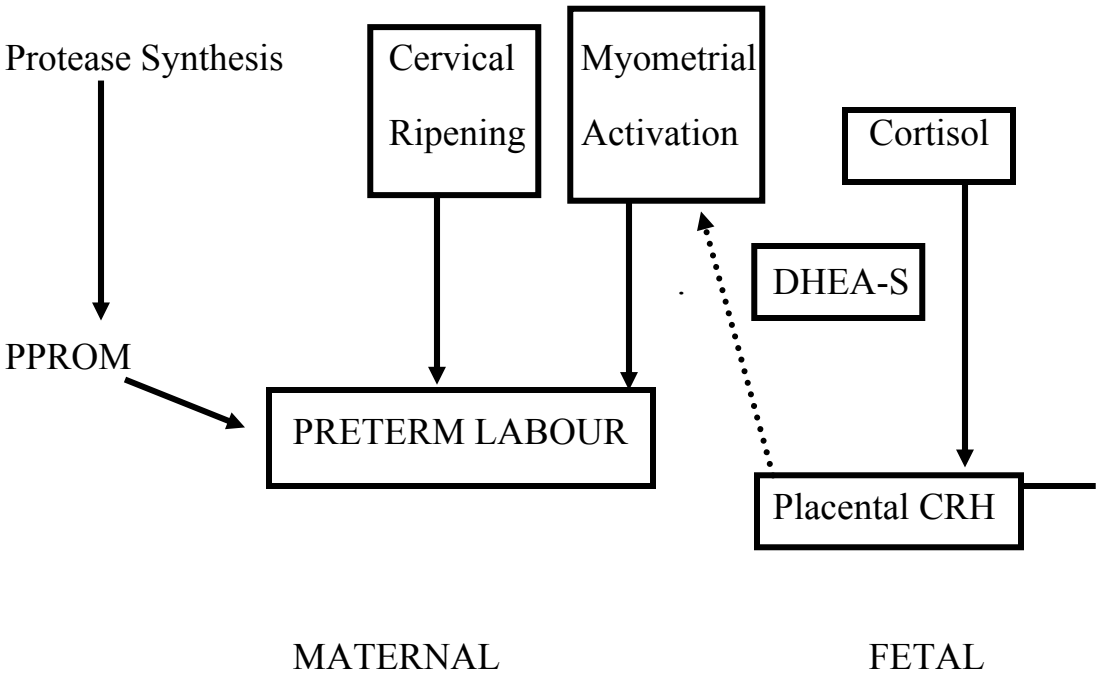
Lipopolysacharides and other bacterial endotoxins induce cytokine production in cells within the deciduas, membranes or fetus itself. Both

lipopolysacharides and the variety of cytokines that are released provoke the release of prostaglandins (PgE_2 , $PGF_2\alpha$ from the fetal membranes, decidua, or both). In the cervix, these cytokines [interleukin-1 (IL), IL-6, IL- 8, and tumor necrosis factor (TNF) - α] cause infiltration of leucocytes which along with prostaglandins cause cervical dilatation.

Activation of proteases in the cervix promotes cervical dilatation and in some cases weakens the fetal membranes and cause PPROM. Transfer of bacteria or cytokines into the fetal circulation is likely to cause a premature activation of CRH and the placental adrenal endocrine cascade causing a loss of myometrial quiescence. With continued leucocyte infiltration, proinflammatory cytokines further increase prostaglandins within maternal decidua and myometrium, which then act as uterotonins to cause preterm labor [14, 53, 62].

MECHANISMS CAUSING INFECTION-INDUCED PRETERM LABOR





MOLECULAR MECHANISMS IN INFECTION INDUCED PRETERM LABOR:

The initial inflammatory response elicited by bacterial toxins is mediated by toll - like receptors. These are specific receptors present in the placenta on trophoblast cells as well as fixed and invading leucocytes [50] . Under the influence of ligands such as bacterial lipopolysaccharides, these receptors increase the local release of chemokines, cytokines and prostaglandins as a part of an inflammatory response.

IL-I produced after exposure to bacterial endotoxins promotes a series of responses that include synthesis of other cytokines viz TNF-2α , IL-6, IL-8; the proliferation, activation and migration of leucocytes, modification in

extracellular matrix proteins; and mitogenic and cytogenic effects, including fever and the acute phase response [25] . IL - 1 also acts to promote prostaglandin formation in many tissues including myometrium, decidua and amnion [13].

The source of these cytokines is the invading leucocytes. The transfer of cytokines from decidua across the membranes into amniotic fluid is severely limited. The IL-1 in amniotic fluid in preterm pregnancies seem to be secreted by mononuclear phagocytes or neutrophils activated and recruited into the amniotic fluid. The amount of amniotic fluid IL-1 would be determined by the number of

leucocytes recruited their activational status or the effect of amniotic fluid constituents on their rate of IL-1 secretion [101].

Monocyte chemotactic protein - 1 (MCP - 1) levels were significantly higher than those found in normal term amniotic fluid [48] . It has been proposed that MCP - 1 may be the factor that initiates fetal leukocyte infiltration of the placenta and membranes.

RELATIONSHIP BETWEEN THE CERVICOVAGINAL FLORA AND PRETERM LABOR:

The cervicovaginal system is a dynamic one and even the modest hormonal fluctuation of the menstrual cycle causes variations in the vaginal bacterial flora.

The discovery of lactobacillus species in vaginal secretions by Albert Doderlain in 1892 marked the beginning of extensive research into the detailed composition of vaginal flora. Normal vaginal flora was regarded as homogenous, consisting only of Gram-positive rods mainly of lactobacillus sp. Lactobacillus produces lactic acid by metabolizing glycogen in the vagina thereby maintaining the acidic vaginal pH. The low pH along with other compounds produced by lactobacillus such as lactacin B, acidolin and hydrogen peroxide inhibit the growth of pathogenic bacteria.

Gram-negative anaerobic bacteria such as Bacteriodes sp, Prevotella sp, Porphyromonas can be found in over 50% of healthy women. [43] .

Candida may also be seen in healthy women. Genital mycoplasmes such as mycoplasma hominis, Ureaplasma urealyticum and potential pathogens such as Klebsiella sp, Staphylococcus aureus and E.coli can be a part of flora in healthy women.

The normal microbial balance is upset when there is a dramatic rise in anaerobes and other organisms and a decrease in lactobacilli resulting in growth of pathogenic ones. A culture of normal vaginal secretions may yield 5 - 15 species of bacteria and the total bacterial count of normal flora is $<10^6$ organisms /ml [69].

With increasing gestation the number of lactobacilli increases such that at term, the vaginal flora is dominated by organisms of low virulence which pose no threat to the fetus. Any alteration in this balance can lead to adverse obstetrical outcomes.

The most common microorganisms associated with preterm birth with intact membranes are [60]:

1 Gardnerella vaginalis

2 Fusobacterium

3 Mycoplasma hominis

4 Ureaplasma urealyticum, Mobiluncus and bacteroides species.

The microbes most commonly associated with clinical chorioamnionitis and fetal infection are E.coli and group B streptococci[31].

Infection with trichomonas vaginalis, chlamydia trachomatis are also associated with preterm labor [3, 18].

1 Women with T.vaginalis infection had a 40% higher risk of giving birth to preterm infant (Vaginal Infections and Prematurity Study).

2 Up to 30% of pregnant women are colonized by group B Streptococcus [85].

3 Chlamydia trachomatis affects 5-15% of pregnant women [68].

RELATIONSHIP OF ABNORMAL COLONISATION TO PRETERM DELIVERY

Study	Year	Gestational age at screening	Relative risk
Gravett et al.,	1986	32	2
MacDonald et al.,	1992	28	1.8
Hiller et al.,	1995	26	1.4
Krohn et al.,	1995	26	1.5
Germaine et al.,	1994	26	1.2
McGregor et al.,	1990	24	2
Ridvan et al.,	1993	20	2
Hay et al.,	1994	20	5.5
Kurkl et al.,	1992	17	6.9

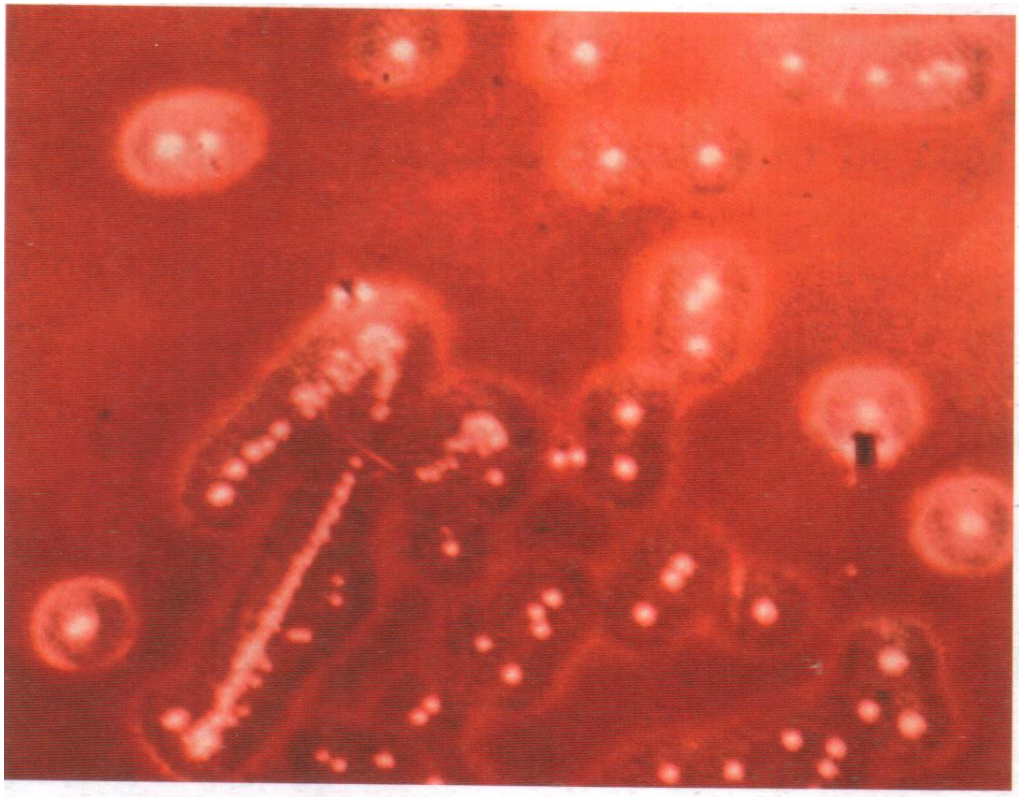
From Progress in Obst. Gynecol. Vol.15 pg.191

URINARY TRACT INFECTION:

Colonization of the urinary tract by group B streptococci has also been found to be associated with preterm labor. High prematurity has also been found to be associated with asymptomatic bacteriuria.

GROUP – B STREPTOCOCCI

GROUP – B STREPTOCOCCI ON SHEEP BLOOD AGAR



GROUP B STREPTOCOCCI:

Though early reports linking group B streptococci to postpartum infections and neonatal meningitis was present since 1930s and 1940s, it was Eickhoff et al., (1964) who documented the role of Group B streptococci in perinatal and neonatal infections [24].

The incidence of pregnancy - associated culture confirmed GBS infection in US is 0.23 per 1000 live births in 1998 [91]. GBS has also been associated with preterm premature rupture of membranes and with preterm delivery [89]. Moller et al. (1984) demonstrated that this association is strongest in patients with GBS bacteriuria [79]. Thomsen and associates (1987) demonstrated significant reduction in preterm labor among patients with symptomatic GBS bacteriuria who were treated with penicillin [96].

Group B streptococci or streptococci agalactiae are gram-positive diplococcic which are beta hemolytic and catalase negative on blood agar plates. They are facultative anaerobes. Group B streptococci can be further subdivided into eight distinct serotypes (Ia, 1b, 1a / c, II, III, IV, V, VI) on the basis of distinctive type - specific polysaccharide antigen. Different serotypes have differing virulence and presentations. Serotype III accounts for a third of early

onset neonatal sepsis, 85% of early onset neonatal meningitis and 90% of late – onset neonatal sepsis. Overall, type III strains account for more than 60% of isolates from infants with all varieties of invasive GBS infections.

Group B streptococci can be recovered from the vagina in 10 - 30% of pregnant women at some point during gestation. GBS can be recovered twice as frequently from rectal cultures as from vaginal cultures. Sheep blood agar is recommended for primary isolation because it is inhibitory for Hemophilus, colonies of which may be confused with those of hemolytic streptococci.

GBS is not considered a sexually transmitted infection and treatment of partners does not prevent recolonization of treated women.

Neonatal GBS colonization may occur either by vertical transmission from a colonized mother as the neonate passes through the birth canal or by horizontal transmission including both nosocomial spread in the nursery from colonized nursery personnel or other colonized neonates. Overall 3 - 12% of all neonates are colonized with GBS in the first week of life. 40 - 70% of neonates born to colonized mothers become colonized usually with the same serotype that is present in the mother. A number of factors enhance the risk of GBS vertical transmission. When mothers are persistently culture

positive carriers or when they are heavily colonized by GBS, an increased risk is present .Increasing

duration of membrane rupture prior to delivery, maternal postpartum fever or endometritis and prolonged labor are associated with increased risk.

Postpartum endometritis is reported to be more frequent among GBS colonized parturients than among non-colonized parturients. GBS may cause urinary tract infections in pregnancy which may be symptomatic or asymptomatic. Maternal deaths from GBS associated postpartum infection are extremely rare.

BACTERIAL VAGINOSIS

Bacterial vaginosis occurs in approximately 20% of pregnant women [38]. It cannot be attributed to a single pathogenic microorganism, rather an increased prevalence and concentration of facultative and anaerobic bacteria specifically Gardnerella vaginalis, Bacteroides, peptostreptococcus, Mobiluncus, Mycoplasma hominis and a decreased prevalence of hydrogen peroxide-producing lactobacillus [26].

Bacterial vaginosis is associated with a two fold increase in preterm delivery [26, 38, 44]. Bacterial vaginosis associated microorganisms are

recovered from 30% of women with intact fetal membranes in preterm labor. Bacterial vaginosis is reported in over 60% of women with early postpartum

endometritis[26]. Almost 6% of preterm deliveries of infants with low birth weight may be attributable to bacterial vaginosis [44].

Nearly half the patients report no noticeable symptoms, but may develop a characteristic copious, malodorous discharge if untreated [33].

The mechanisms by which bacterial vaginosis cause prematurity are:

1. The increased intravaginal concentrations of bacteria may overwhelm the local host defenses, allowing for ascending infection.
2. The bacterial proteases and phospholipases may weaken the membranes or stimulate prostaglandin production.

The diagnosis of bacterial vaginosis is made by the Amsels Criteria [26]. The criteria include:

1. The presence of a thin, homogenous discharge which adheres to the vaginal walls.

2. A vaginal pH above 4.5

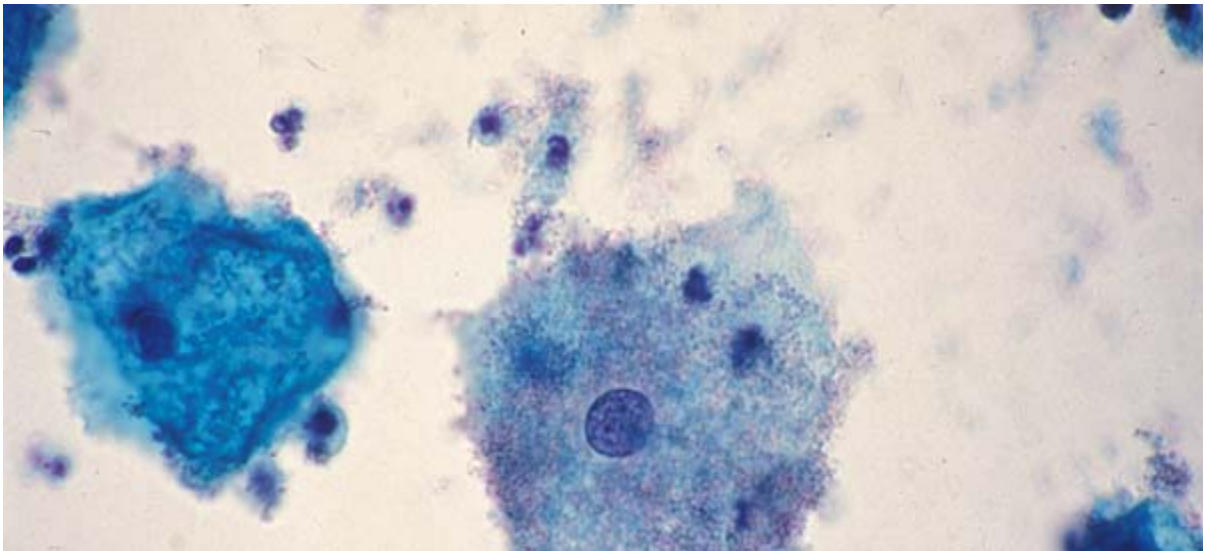
3. The release of a fishy odor upon alkalinisation with 10% potassium hydroxide.

4. Clue cells on a saline wet mount.

The diagnosis of bacterial vaginosis requires the presence of three of these four criteria. The diagnosis of bacterial vaginosis can also be made by direct gram stain of the vaginal discharge .The gram stain is both highly sensitive (97%) and specific (79%).

Routine prenatal screening for bacterial vaginosis and treatment of asymptomatic cases among low risk obstetric population is not yet recommended.

CLUE CELLS



IMMEDIATE CONSEQUENCES OF PRETERM LABOUR

Perinatal mortality: Preterm labor accounts for 85% of deaths in structurally normal infants. The survival rates at a tertiary teaching hospital in the United Kingdom were reported as follows [87]:

Gestational Age	Survival Rates
23 weeks	20%
24 weeks	36%
25 weeks	41%
26 weeks	54%
27 weeks	65%
28 weeks	91%
29 weeks	94%

> 32 weeks	almost 100%

The Indian survival rates for preterm babies are as follows [58]:

26 - 30 weeks	67%
30 - 34 weeks	75%
34 - 38 weeks	94.3%

Neonatal morbidity: Survival is not the only issue of consideration. The incidence of major neonatal morbidity ranges from [56].

1. Respiratory Distress Syndrome	23 – 81%
2. Patent Ductus Arteriosus	13 – 50%
3. Sepsis	5 – 31%
4. Necrotizing Enterocolitis	2 – 25%

Indian studies also show similar incidence of morbidities [97].

1. Respiratory Distress Syndrome	80%
2. Patent Ductus Arteriosus	50%
3. Intraventricular haemorrhage	31.5%
4. Retinopathy of Prematurity	25.2%

Hypothermia and hypoglycemia are common problems in preterm babies. Other major problems attributed to preterm delivery include intraventricular hemorrhage, periventricular leucomalacia and retinopathy of prematurity [35].

PRETERM BABY WITH RESPIRATORY DISTRESS

PRETERM BABY WITH SEPSIS

33

LONG TERM CONSEQUENCES OF PRETERM LABOUR

The long-term outcomes for infants born preterm is an important health problem in society. Many of them have cerebral palsy [57]. Intellectual impairments including difficulties in areas of learning and academic achievement, visual motor integration, language performance and behavioral problems are more frequent in preterm babies [39].

The number of blind survivors of preterm delivery has reached epidemic proportions. Refractive errors (astigmatism, myopia or hypermetropia) and strabismus are also common. Hearing loss has been reported to occur in 1.5 – 9 % of preterm infants.

There is poor feto-maternal bonding. The psychological and physical stress it puts on the parents is heavy. There is loss of productivity and childcare has to be arranged for the other siblings during the delivery and neonatal period

Growth in later childhood is also affected. Infants who suffered from hyaline membrane disease or who required assisted ventilation may develop chronic pulmonary disease [88]. Infants delivered preterm are between 2 to 4.5 times more likely to be hospitalized than term infants in the first year of life. Male infants born early are at much greater risk for needing inguinal hernia repair by 8 years of age.

Doyle and colleagues (1994) reported that only 20 % of preterm infants were totally free of impairment at 5 years of age [23].

ECONOMIC CONSIDERATIONS:

The cost of acute hospital care for preterm infants is very high. Antenatal care for these mothers may prove costly as many of them have obstetrical complications. The long hospital stay adds to the economic burden. In the United Kingdom, the average cost of neonatal intensive care

is approximately 35000 pounds per infant. After discharge from the hospital, the health care and social service systems continue to incur substantial costs for the special needs and special education for these children, more so with long term morbidity. Added to this the loss of productivity on the part of the parents also increases the economic burden.

MATERIALS AND METHODS

The present study was conducted at the Institute of Obstetrics and Gynecology, Women and Children's Hospital, Chennai, a tertiary level government institution for obstetrics and gynecology. There are 17,000 to 18,000 deliveries annually. This study analyzed one thousand consecutive preterm pregnancies from 2005 to 2006. The study was divided into two phases. In the first phase, which was a descriptive study, 1000 consecutive

cases of preterm labor, both spontaneous and induced, which presented to the labor ward, were included in the study. These cases were analyzed for demographic data and obstetric history. The second phase was a case control study in which one hundred cases out of these thousand which were categorized as due to idiopathic factors underwent vaginal smear study when presenting in preterm labor. Equal numbers of patients with uncomplicated term deliveries were included in the control arm. The pregnancy outcome in these hundred cases was also analyzed separately.

INCLUSION CRITERIA:

For phase one, all cases of established preterm labor presenting to the labor ward during the study period were included. These included patients who had spontaneous preterm labor and those in whom it had to be induced due to medical

or obstetric indications. These cases were either booked or unbooked. Referral cases were also included in the study. In patients who had reliable dates, gestational age was calculated from their last menstrual period. In those without reliable dates, an early ultrasound (<24wks) was used to confirm gestational age. The subset analysis of 100 cases which formed the second phase to study the association of infection and unexplained preterm

labor however included only spontaneous preterm labor with or without rupture of membranes. Cases where a known triggering factor for preterm labor existed were not included in this subset analysis.

EXCLUSION CRITERIA:

Cases in which neither the last menstrual period was known, nor was an early ultrasound report (<24wks) available were excluded from the study.

The sample size for the first phase was 1000 consecutive preterm births

which occurred between 2005 to 2006.

For the second phase, 100 cases of preterm labor with no known triggering factor was the study group. Control arm had 100 cases of uncomplicated term pregnancies.

For cases included in the subset analysis to study the association between vaginal infection and preterm labor only those cases were included which had no other identifiable triggering factor for preterm labor. Hence patients in preterm pregnancy who had multiple pregnancy, placental

abnormalities, hydramnios, preclampsia, congenital anomalies and diabetes at the time of admission were excluded from the subset analysis.

CLINICAL STUDY:

A detailed history regarding name, age, socioeconomic status and whether booked or unbooked were noted. The duration of gestation was calculated as from the last menstrual period and the earliest ultrasound report available. Other points in obstetric history which were noted were parity, previous obstetric history. Any obstetrical complications in the present pregnancy were also noted. The time of onset of pains and the rupture of membranes were also carefully noted. The cases were then clinically examined and the gestational age confirmed. Speculum examination was done to detect preterm premature rupture of membranes. In cases were no known triggering factors was identified, a vaginal smear was taken from the posterior fornix using a sterile cotton swab. This specimen was immediately sent for culture. Pervaginal examination was done to assess the state of membranes and cervical dilatation. Antibiotics

(parenteral ampicillin 1 gm intravenous twice a day) were started at admission

itself for all cases of preterm labor. Steroids were also started for all cases of preterm labor between 28 weeks and 34 weeks.

LABORATORY TECHNIQUE:

Samples were collected from the posterior fornix with sterile cotton tipped disposable swab. A sterile nonlubricated vaginal speculum was used. Samples were then transported to the laboratory immediately. Here it was cultured on sheep blood agar plates and read for hemolysis. The organism isolated was then identified. If a beta - hemolytic streptococci was identified further tests were done to confirm the group B strain. CAMP test was done. Grouping was also done with the group B specific sera to confirm the strain of organism. Another swab was also taken from these patients and tested for bacterial vaginosis by Amsel's criteria. 10% KOH was added to identify the fishy odor. A wet mount preparation was made to detect the presence of clue cells.

Detailed records as per the proforma were noted. The baby was examined after delivery. The birth weight, Apgar score, maturity and mode of delivery were noted. After the delivery the gestational age was reconfirmed.

All the babies born to patients in the study and control group were followed up till discharge from the hospital. In the follow up of babies, any neonatal morbidity in the form of infection, respiratory distress and convulsions

were looked for. All cases of perinatal mortality were studied in detail with careful analysis to determine what factors were more consistently associated with fetal and neonatal death.

DATA ANALYSIS

PHASE 1 STUDY

DATA ANALYSIS

PHASE 1: EPIDEMIOLOGICAL ANALYSIS OF RISK FACTORS

TABLE: 1

AGE DISTRIBUTION OF CASES

Age (Yrs)	No. of Preterm Deliveries	Percentage of Preterm Deliveries
<20yrs	193	19.3%
21-25yrs	503	50.3%
31-35yrs	271	27.1%
>35yrs	29	2.9%
Total	**1000**	**100**

The above table shows that the majority of the patients who went into preterm labor were less than 25yrs of age.

TABLE: 2

DISTRIBUTION OF CASES WITH PARITY

PARITY	No. of Preterm Deliveries	Percentage of Preterm Deliveries
PRIMI	570	57.0%
G2	296	29.6%
G3	103	10.3%
G4	20	2.0%
>G4	11	0.11%
Total	**1000**	**100.00**

From the above table, it is seen that nulliparas had a higher incidence of preterm birth.

TABLE: 3

DISTRIBUTION OF CASES DEPENDING ON ANTENATAL CARE

Antenatal Care	No. of Preterm Deliveries	Percentage of Preterm Deliveries
Booked	475	47.5%
Unbooked	525	52.5%
Total	**1000**	**100.00**

From the above table it can be seen that a majority of the patients who went into preterm labor have not had antenatal care.

TABLE: 4

DISTRIBUTION OF CASES ACCORDING TO SOCIOECONOMIC CLASS

Income (Rs.)	No. of Preterm Deliveries	Percentage of Preterm Deliveries
< 1000	556	55.6%
1001-2000	321	32.1%
2001-3000	107	10.7%
3001-4000	5	0.5%

4001-5000	5	0.5%
>5000	6	0.6%
Total	**1000**	**100**

A majority of the cases who had preterm labor belonged to the lower socioeconomic class.

TABLE: 5

DISTRIBUTION OF CASES ACCORDING TO OCCUPATION

Occupation	No of patients	Percentage (%)
Housewife	884	88.4
Unskilled workers	104	10.4
Skilled workers	12	0.12
Total	**1000**	**100**

88.4% of the patients who presented with preterm labor were housewives.

TABLE: 6

DISTRIBUTION OF CASES ACCORDING TO BIRTH WEIGHT

Birth Weight (kg)	No. of Preterm Births	Percentage of Preterm Births
<1kg	73	6.7%
1-1.5	168	15.54%
1.5-2	353	32.66%
2-2.5	417	38.58%
2.5-3	58	5.34%

3-3.5	9	0.83%
>3.5kg	4	0.37%
Total	**1081**	**100%**

A majority of the preterm babies had birth weight in the 1.5-2.5kg range. There were 13 babies who had birth weight greater than 3kg but were still preterm. The total number of babies were more than 1000 as there were 77 twin pregnancies and 2(two) triplets.

TABLE: 7

DISTRIBUTION OF CASES ACCORDING TO GESTATIONAL AGE

Gestational Age (Weeks)	**No. of Preterm Births**	**Percentage of Preterm Births**
<28wks	26	2.41%
29-30wks	46	4.26%
31-32wks	125	11.56%

33-34wks	454	41.99%
35-36wks	430	39.78%
TOTAL	**1081**	**100%**

A majority of the cases were of gestational age between 33-36 weeks. 2.41% of cases were extremely preterm (less than 28 weeks).

TABLE: 8

DISTRIBUTION OF CASES WITH RESPECT TO PREVIOUS BAD OBSTETRIC HISTORY

Previous Obstetric History	No. of Preterm Deliveries	Percentage
H/o 1 Spontaneous Abortion	88	50%
H/o 2 Spontaneous Abortions	9	5.1%

H/o Previous MTP a. 1st Trimester MTP b. 2nd Trimester MTP	10 5	5.7% 2.8%
H/o 1 Preterm Delivery	48	27.3%
H/o 2 Preterm Delivery	4	2.3%
H/o 3 Preterm Deliveries	3	1.7%
H/o >3 Preterm Deliveries	9	5.1%
Total	**176**	**100**

Patients with history of one spontaneous abortion formed half of the patients with preterm labor among those with previous bad obstetric history.

TABLE: 9

DISTRIBUTION OF CASES ACCORDING TO ETIOLOGY

Etiology	No. of Preterm Deliveries	Percentage of Preterm Deliveries
1. Multiple Pregnancy a). Twins b). Triplets	77 2	7.7 0.02
2. Preeclampsia a). Mild	70	7

b). Severe	90	9
3. AP-eclampsia	39	3.9
4. PPROM	37	3.9
5. Fetal Anomalies	77	7.7
6. Antepartum Hemorrhage. a). Abruptio b). Placenta Previa	 70 3	 7.0 0.3
7. Diabetes	16	1.6
8. Heart Disease	3	0.3
9. Jaundice	4	0.4
10. Fever, IP Sepsis	9	0.9
11. Anemia	7	0.7
12.HIV	2	0.2
13. Hydramnios	1	0.1
14. Uterine Anomaly	3	0.3
15. Chickenpox	2	0.2
16. Rupture	11	1.1
17. Idiopathic	485	48.5
Total	**1000**	**100**

About 50% of the cases have an identifiable cause for the preterm labor.

48.5% have no definite cause identified for the preterm labor.

TABLE: 10

DISTRIBUTION OF CASES ACCORDING TO SPONTANEOUS Vs INDUCED PRETERM DELIVERY

COMPLICATION	**INDUCED**		**SPONTANEOUS**	
	No of	**Percentage**	**No of Cases**	**Percentage**

	Cases			
1. Mild Preeclampsia	23	32.8%	47	67.14%
2. Severe Preeclampsia	72	80%	18	20%
3. AP Eclampsia	37	94.87%	2	5.1%
4. PPROM	12	32.4%	25	67.56%
5. Fetal Anomalies	74	96.1%	3	3.89%
6. Diabetes	5	31.25%	11	68.75%
Total	223		106	

43.3% of the cases which had obstetric complications associated were induced.

TABLE: 11

DISTRIBUTION ACCORDING TO MODE OF DELIVERY

Mode of Delivery	No. of Preterm Deliveries	Percentage of Preterm Deliveries

Labor Natural	714	71.4%
LSCS	128	12.8%
Repeat LSCS	93	9.3%
Assisted Breech	45	4.5%
Instrumental Delivery	6	0.6%
VBAC	10	1.0%
Laparotomy	4	0.4%
Total	**1000**	**100%**

The most common indications for Caesarean section were fetal distress, breech presentation, abruptio placenta and severe preeclampsia where induction had failed. Laparotomy was done for four cases of uterine rupture.

TABLE: 12

CORRELATION OF PERINATAL MORTALITY RATE WITH BIRTH WEIGHT

Birth Weight	Total No of Cases	No of Early Neonatal Deaths	No of Still Born	PNMR
<1kg	73	37	25	84.9%
1-1.5kg	168	51	23	44.0%
1.5-2.0kg	353	82	24	30.0%
2-2.5kg	417	15	12	6.47%
2.5-3kg	58	4	1	8.6%
3-3.5kg	9	0	1	11.1%
>3.5kg	4	0	0	0%
Total	**1081**	**190**	**85**	**100**

Babies with birth weight less than 1 kg had the maximum mortality. Out of the thirteen babies with birth weight more than 3 kg, four were infants of diabetic mothers. One baby with birth weight in the range of 3 to 3.5 kg had multiple congenital anomalies and was still born.

TABLE: 13

CORRELATION OF PERINATAL MORTALITY RATE WITH GESTATIONAL AGE

GA (Wks)	No of Cases	No of Early Neonatal Deaths	No of Still Born	PNMR
≤28	26	14	8	84.6
29-30	46	14	19	71.74
31-32	125	45	23	54.4
33-34	454	103	24	27.97
35-36	430	14	11	5.8
Total	**1081**	**190**	**85**	**100**

The mortality rate was higher for babies of gestational age less than 32 wks.

TABLE: 14

CORRELATION OF MODE OF DELIVERY AND PERINATAL MORTALITY RATE.

Mode of Delivery	No of Cases	No of Neonatal Deaths	Still Born	Perinatal Deaths	Percentage of Perinatal Deaths
1. Labor Natural	773	134	63	197	25.4%
2. LSCS	142	11	5	16	11.2%
3. Repeat LSCS	96	30	8	38	39.6%
4. Assisted Breech	50	13	3	16	32%
5. Forceps Delivery	6	1		1	16.6%
6. VBAC	10	1	2	3	30%
7. Others (Laparotomy)	4		4		100%
Total	**1081**	**190**	**85**	**275**	

Assisted breech deliveries and repeat caesarean sections were associated with higher perinatal mortality rate.

TABLE: 15
INCIDENCE OF NEONATAL COMPLICATIONS IN PRETERM

Complications	No of Preterm Babies with complications	Percentage
1. Respiratory Distress	127	30.1%
2. Neonatal Hyperbilirubinemia	45	10.64%
3. Sepsis	68	16.08%
4. Birth Asphyxia	72	17.02%
5. IUGR	40	9.46%
6. Fetal Anomalies	25	5.9%
7. Extreme Prematurity	26	6.15%
8. Superficial Infections	7	1.65%
9. Feeding problems	6	1.42%
10. Aspiration Pneumonia	4	0.95%
Total complications	**420**	

The overall incidence of neonatal complications among all preterm babies was 39.14%. Respiratory distress was the most common complication (30.1%). 16.08% cases of preterm labor had neonatal sepsis. Klebsiella was

the most commonly isolated organism. One case each of Pseudomonas and E.coli sepsis were also identified.

TABLE: 16

CAUSES OF EARLY NEONATAL DEATHS

Cause	No of Preterm Babies	Percentage of Preterm Babies
1. Extreme Prematurity	25	13.16%
2. Birth Asphyxia	40	2.05%
3. Respiratory Distress a). Hyaline membrane disease. b). Aspiration Pneumonia c). Respiratory Failure d). Transient Tachypnoea of New Born	 43 3 27 5	 22.16% 1.58% 14.2% 2.6%
4. Sepsis	30	15.79%
5. Anomalies	13	6.8%
Total	**190**	

The most common cause of neonatal death in preterm babies was respiratory distress (41.54%). Hyaline membrane disease was responsible for a majority of the cases of respiratory distress.

TABLE: 17

ASSOCIATION OF OBESTETRIC COMPLICATIONS WITH PERINATAL MORTALITY IN PRETERM LABOUR.

Complications	No of Cases	Percentage of Cases
1. Multiple Pregnancy	41	14.9%
2. Preeclampsia	58	21.1%
3. AP Eclampsia	31	11.27%
4. PPROM	12	4.36%
5. Anomalies	14	5.09%
6. APH	34	12.36%
7. Jaundice	4	1.45%
8. Anemia	1	0.36%

9. Diabetes	5	1.8%
10. Other Causes	9	3.2%

76% of the perinatal deaths had an obstetric complication associated with them.

DATA ANALYSIS

PHASE 2 STUDY

PHASE 2: ANALYSIS OF INFECTION AS A RISK FACTOR IN PRETERM LABOR

TABLE: 18

INCIDENCE OF INFECTIONS IN PATIENTS WITH PRETERM LABOUR AND CONTROLS.

Group	Total	Culture Positive		Culture Negative	
		No	Percentage	No	Percentage
Study	100	28	28%	72	72%
Control	100	10	10%	90	90%

Chi^2: 10.52

P value: <0.001

There was 28% incidence of infection in the study population compared to 10% in the control population which was statistically significant.

TABLE: 19

DISTRIBUTION OF MICROORGANISMS IN PATIENTS WITH PRETERM LABOUR AND CONTROL.

MICROORGANISM	STUDY GROUP		CONTROL GROUP	
	No of Cases	Percentage	No of Cases	Percentage
1. E.coli	5	17.86%	4	40%
2.Klebsiella	4	14.29%	1	10%

3. Group B Streptococci	11	39.29%	5	50%
4. Bacterial Vaginosis	8	28.57%	0	0
Total	28		10	

Bacterial vaginosis was significantly isolated from preterm labour cases but no cases were found in term pregnancies.

TABLE: 20

BIRTH WEIGHT OF FETUSES IN SUBGROUP STUDY POPULATION.

Birth Weight	**Culture Positive**		**Culture Negative**	
	No	Percentage	No	Percentage
<1.5kg	2	7.14%	5	6.9%
1.5-2kg	17	60.7%	21	29.17%
2-2.5kg	9	32.14%	34	47.2%

>2.5	-		6	8.3%

In the infection positive group 70% of babies were less than 2kg. None of the babies in culture positive group weighed more than 2.5kg. In the culture negative group 63.25% of babies weighed more than 2.5kg.

TABLE: 21

NEONATAL MORBIDITY IN SUBGROUP STUDY POPULATION

Morbidity	**Culture positive**		**Culture Negative**	
	No	Percentage	No	Percentage
Resp Distress	5	38.5%	7	41.2%
Sepsis	5	38.5%		
NNH				

	1	7.7%	6	35.3%
Birth Asphyxia	1	7.7%	4	23.5%
Superficial Skin Infection	1	7.7%		

38.5% cases in the infection positive group had features of neonatal sepsis. There were no cases of neonatal sepsis in the culture negative group.

TABLE: 22

NEONATAL MORTALITY IN SUBGROUP STUDY POUPLATION

Complication	**Culture Positive**		**Culture Negative**	
	No	Percentage	No	Percentage
Neonatal Deaths	3	15%	2	2.5%

The neonatal mortality in culture positive cases was 15%. Out of the three deaths, two were in GBS positive patients and one was in a Klebsiella positive patient. The cause of death was respiratory distress syndrome (RDS), sepsis, birth asphyxia (one each). In the culture negative group there were two deaths due to respiratory distress and birth asphyxia. There was no case of sepsis in the culture negative group.

DISCUSSION

Preterm delivery is a common complication and affects 7-11% deliveries worldwide.

Berkowitz et al 1993 reviewed the incidence of preterm labour and found that it varied in different studies[5]. It varied from country to country and institution to institution. The various studies showing incidence of preterm delivery in India are.

Study	Year	Incidence
ICMR	1990	10-15%
Agarwal et al[2]	1994	11.6%
Bhavsar & Shrotri[7]	1989	14%
Dolar and Nagpal[22]	1995	14%
Deshmukh et al[52]	1997	10.2%
PRESENT STUDY	2006	13.4%

The present study shows an incidence of preterm labor which is similar to other Indian studies.

Venkat Shoba et al in 2003 conducted a retrospective analysis of spontaneous versus induced preterm deliveries and their neonatal outcomes[97].

Kukkad et al in 2001 studied 2500 preterm deliveries with respect to their epidemiological and etiological factors[58]. Deshmukh et al in 1997 evaluated 588 babies regarding their perinatal morbidity and mortality[52].

Barros et al in 2006 studied the temporal trends of preterm births and their neonatal outcomes[4]. Grant et al reviewed the optimum mode of delivery for

preterm babies and reported that data is not sufficient to justify an elective cesarean section for a small baby[36]. Kingdom et al in 1995 and Copper et al in 1990 studied the survival rates of preterm babies according to their gestational age[17,55]. Chard et al in 1997 studied the risk of neonatal death and respiratory distress in relation to birth weight of preterm babies[15]. Crowley et al in1995 reviewed 15 trials including 3560 cases of preterm labor which demonstrated that the use of antenatal steroids significantly reduces the risk of respiratory distress syndrome and neonatal death[21].

Mac Donald et al in 1991 found that 12.1% of women with preterm labor and 6% of women at term have bacterial growth in their vagina[65]. Reagan et al and Adams et al studied vaginal flora in preterm deliveries and demonstrated that G. vaginalis, bacteroid spp., E. coli, Klebsiella and Staph.aureus are significantly associated with preterm labor[1,86]. In a Bulgarian study of 110 pregnant women it was found that the colonization of group B streptococcus or their symbiosis with

other microorganisms after the 23rd or 24th week of gestation display a correlation with preterm birth. A Danish study in 2001 also concluded that GBS colonization was associated with preterm delivery.

In a prospective study by Goyal et al it was found that bacterial vaginosis has a significant association with preterm labor and adverse pregnancy outcomes[34]. Carey et al concluded that an increase in E. coli or K. pneumoniae in the vagina is an independent risk factor for preterm birth[11]. Subtil D et al in their study of 102 patients also found that bacterial vaginosis is associated with preterm labor but does not appear to predict preterm birth[95]. Friese et al also concluded that infection has a significant association with preterm birth[29]. Flynn C A et al conducted a meta analysis to determine the magnitude of risk of preterm delivery conferred by bacterial vaginosis[27].

Holst et al studied vaginal microflora of women in idiopathic preterm labor and concluded that bacterial vaginosis and its associated organisms are strongly associated with idiopathic preterm labor[46].

Study	Incidence
Lamont and Chen et al [59], 1998	60.5%
Venkat Shoba et al, 2003 [97]	64%
Kukkad et al 2001[58]	37.4%
PRESENT STUDY 2006	48.5%

Spontaneous unexplained preterm labor formed 48.5% of our present study.

Of these unexplained preterm births, primiparas formed 65.4%.

ETIOLOGICAL FACTORS

Factor	Kukkad et al 2001[58]	PRESENT STUDY 2006
1. Multiple Pregnancy	8.9%	7.9%
2. Preeclampsia		
a). Mild	16%	7%
b). Severe	11%	9%
3. AP eclampsia	5.3%	3.9%
4. Antepartum Hemorrhage	13%	7.3%
5. Idiopathic	37.4%	48.5%

The incidence of etiological factors was similar in both studies.

CORRELATION OF PERINATAL MORTALITY WITH MODE OF DELIVERY

Mode of Delivery	Deshmukh et al[52] 1997	PRESENT STUDY
Labor Natural	32.7%	25.4%
Assisted Breech	48.4%	32%
Caesarean Section	21.4%	22.6%
Forceps Delivery	35.2%	16.7%

The present study had a lower perinatal mortality for instrumental deliveries and assisted breech deliveries than the Deshmukh et al study [52].

PERINATAL MORTALITY IN PRETERM

Study	Year	Perinatal Mortality (Percentage)
Malik and Mir [67], Srinagar	1992	56.2%
Agarwal et al[2], Banaras	1994	56.4%
Deshmukh et al[52], Wardha	1997	64.7%
PRESENT STUDY	2006	25.4%

The low perinatal mortality rate in our study can be explained by the high number of borderline preterm cases which was included in the study. The effective neonatal services offered also bring down the perinatal mortality to a large extent.

CORRELATION OF PERINATAL MORTALITY WITH BIRTH WEIGHT

Birth Weight	Deshmukh et al[52] 1997	PRESENT STUDY
≤1kg	90%	84.9%
1-1.5kg	66%	44%
1.5-2kg	26.7%	30%

Very low birth weight babies have a poor perinatal outcome as shown in both studies above. The survival rate for a baby with birth weight less than one kg is only 15.1% in our study which was similar to the study by Deshmukh et al [52].

CORRELATION OF PERINATAL MORTALITY WITH GESTATIONAL AGE

Gestational Age	Cloherty and Stark[51] 1980	Deshmukh et al[52] 1997	PRESENT STUDY
26-30wks	30-100%	33%	76.39%
30-34wks	10-40%	25%	33.6%
34-37wks	5-10%	5.7%	5.8%

Perinatal mortality is higher in babies of gestational age less than 34 weeks.

CAUSES OF PERINATAL MORBIDITY

Neonatal Complication	Deshmukh et al[52] 1997	Venkatshoba et al[97] 2001	PRESENT STUDY 2006
Respiratory Distress	11.69%	33%	30%
Sepsis	25.4%	13%	16.08%
Neonatal Hyperbilirubinemia	35.47%	69%	10.4%
Feeding Problems	23.76%		1.42%

The incidence of respiratory distress and sepsis was comparable to the study done by Venkat Shoba et al [97].

CAUSES OF EARLY NEONATAL DEATHS

Complication	Deshmukh et al[52] 1997	PRESENT STUDY
Extreme Prematurity	12.3%	13.16%
Birth Asphyxia	24.7%	21.05%
Respiratory Distress a). Hyaline Membrane disease. b). Aspiration pneumonia c). Respiratory Failure d). Transient Tachypnoea of new born.	6.7% 13.4%	23.16% 1.58% 14.2% 2.6%
Sepsis	19.1%	15.79%
Anomalies	18.7%	6.8%

The incidence of extreme prematurity and birth asphyxia were similar in both studies. Hyaline membrane disease has a high incidence in our study which may be due to the absence of surfactant use in our neonatal care unit due to the cost factor. Also all our cases were in established preterm labor. Hence the required time for steroids to act was insufficient.

SUMMARY

In phase one of the study, 1000 cases of preterm labor were evaluated for their epidemiologic characteristics and their perinatal outcome.

- A majority of the patients were less than 25yrs.
- Preterm labor was more common in the unbooked cases.
- A majority of the patients belonged to the lower socio economic class.
- The incidence of preterm labor in our study was 13.4%.
- A majority of the preterm births were of gestational age of 33 – 36 weeks and had a birth weight in the range 1.5 – 2.5 kg.
- 17.6% of preterm deliveries had a previous obstetric history of spontaneous abortions, preterm deliveries or medically induced abortions.
- The incidence of unexplained preterm labor was 48.5%. Of these, 65.4% were primiparas.
- The most frequent obstetric complications associated with preterm labor are multiple pregnancy (7.9%), preeclampsia (16%), antepartum

hemorrhage (7.3%) and preterm premature rupture of membranes (7.7%).

- The perinatal mortality rate of preterm in the present study was 25.4%.
- The perinatal mortality was higher for babies weighing less than 1.5 kg and babies less than 32 weeks of gestational age.

- 76% of the perinatal deaths had an obstetric complication associated with them.
- Of the neonatal complications, respiratory distress (30%) and sepsis (16.08%) were the most common.
- The main cause of neonatal mortality was hyaline membrane disease (23.16%), birth asphyxia (21.05%). Extreme prematurity (13.16%) and sepsis (15.79%) were the other causes.

In phase two of the study, 100 cases of preterm labor of unexplained etiology and equal number of uncomplicated term pregnancies were studied.

- The incidence of infections was 28% in the study group where as it was 10% in the control group. This is a statistically significant association of infection as a risk factor for preterm labor.

- The organisms isolated were group B streptococcus, E. coli and Klebsiella.
- Bacterial vaginosis was found to be a significant risk factor for preterm delivery.
- In cases of preterm birth where the infective etiology was proven, the birth weight was less than 2.5kg.
- There were 5 cases of neonatal sepsis in the culture positive group whereas there was no case of neonatal sepsis in the culture negative group. Out of these five cases, one baby died due to sepsis.

CONCLUSION

The problem of preterm labor will continue to puzzle the obstetrician and neonatologist in the future too. The poor survival and high morbidity of preterm babies is due to the functional immaturity of various systems and poor tolerance to stress of labor and delivery.

The perinatal outcome can be improved by inutero transfer of preterm babies from the peripheral centres to centers with level III

neonatal services and the use of antenatal steroids in cases where preterm labor is anticipated.

As proved by our study, infection is a significant risk factor for unexplained preterm labor, one should be looking at whether routine infective screening should be carried out for high risk cases and those presenting with symptoms suggestive of infections.

BIBLIOGRAPHY

1. Adams MM, Sarmo AP, Harlass FT. Epidemiology 1995; 6:525.

2. Agarwal A, Swain A, Ohja K, Bhatia S. J Obstet and Gyn Ind.1994; 44:210.

3. Andrews WW, Hauth JC, Goldenberg RL. Infection and preterm birth. Am J. Perinatal 2000; 17:357-365.

4. Barros FC, Velez MP. Temporal trends of preterm birth subtypes and neonatal outcome. Obstet Gynecol 2006; May 107 (5): 1035-41.

5. Berkowitz GS. Epidemol Rev. 1993; 15:414.

6. Bern S. Understanding Prematurity: Presentation at the 26th annual International Neonatal Conference.MIGMI FL, 2002.

7. Bhavsar S, Shrotri A. J Obst and Gyn. Ind. 1989; 39:685.

8. Bloom SL, Yost NP, Mc Intire DD et al. Recurrence of preterm birth in singleton and twin pregnancy. Obstet gynecol. 2001b; 98:379.

9. Bobitt HJR, Ledge WJ. Obstet Gynecol. 1977; 51:56.

10. Bragonier JR, Cushner IM, Hobel CJ. Social and personal factors in the etiology of preterm birth. in Causes of preterm birth. Eds. Fuchs F, Stubbiefield P. Macmillan Publishing Co 1984; 64-85.

11. Carey JC, Klebenoff MA. Is a change in the vaginal flora associated with an increased risk of preterm birth? Am J Obstet Gynecol 2005.

12. Carrol SG, Biott M, Nicolaides KH. Preterm prelabour amniorrhexis outcome of live births. Obstet Gynecol. 1995; 86:18.

13. Casey ML, Cox SM, Word RA, et al: Cytokines and infection induced preterm labor. Reprod fertile Devl 1990; 2:499.

14. Challis JE, Sloboda DM, Alfeeidy N, et al: Prostaglandins and mechanisms of preterm birth. Reproduction 2002; 124:1.

15. Chard T, Soc A, Costeloe K. The risk of neonatal death and respiratory distress syndrome in relation to birth weight of preterm infants. Am J. Perinatal 1997; 14:523-526.

16. Copper RL, Goldenberg RL, Davis RO, et al: The preterm prediction study: Maternal stress is associated with spontaneous preterm birth at less than 35wks gestation. Br J Obstet Gynaecol 1996; 175: 1286.

17. Copper RL et al. Am J Obst Gyn 1990; 162:748.

18. Cotch MF, Nugent RP, et al. Trichomonas vaginalis associated with low birth weight and preterm delivery. Sex Transm Dis 1997; 24: 353-360.

19. Cox SM, Bohman VR, Sherman ML, et al. Randomized Investigation of antimicrobials for prevention of preterm birth. Am J Obstet Gynaecol 1996; 174: 206.

20. Cox SM, Williams MC, Leveno KJ. The natural history of preterm ruptured membranes: What to expect of expectant management. Obstet Gynecol 1988; 71:558.

21. Crowley PA. Antenatal corticosteroid therapy: a metaanalysis of the randomized trials. Am J Obstet Gynecol 1995; 173:322-333.

22. Dolar R, Nagpal S. J Obstet and Gyn Ind 1995; 45:380.

23. Doyle LW, Premezel M, Ford AW et al. The Obstetrician and the extremely immature fetus (24-26wks): Outcome to 5yrs of age. Aust NZ J Obstet Gynaecol 1994; 34: 421.

24. Eichoff T, Klein J, Daly A et al. Neonatal sepsis and other infections due to group B beta hemolytic streptococci. N Engl J Med 1964; 271: 1221-1228.

25. El-Bastawissi AY, Williams MA, Riley DE et al. Amniotic Fluid IL-6 and preterm delivery: A review. Obstet Gynecol 2000; 95:1056.

26. Eschenbach DA, Davick PR, Williams BL. Prevalence of hydrogen peroxide-producing lactobacillus species in normal women and women with bacterial vaginosis. J Clin Microbiol 1989; 27:251-256.

27. Flynn CA, Helwig AL, Meurer LN. Bacterial vaginosis in pregnancy and the risk of prematurity: a metaanalysis. .J Fam Pract 1999; Nov 48 (11):898-898.

28. Fortunato ST, Menon R, Lombardi SJ: Support for an infection induced apoptotic pathway in human fetal membranes. Am J. Obstet Gynecol 2001; 184:1392.

29. Friese K. The role of infection in preterm labor. JOG 2003; April 110(20):
52-54

30. Gielchinsky, Mankuta D, Samueloff A. First pregnancy in women over 45 years of age carries increased obstetrical risk. Am J. Obstet Gynecol.2002; 187: 587..

31. Goldenberg RL, Flauth JC, Andrews WW. Intrauterine infection and preterm delivery. N Engl J Med. 2000; 342:100.

32. Gonclaves LF, Romero R. Intrauterine infection and prematurity. Ment Retard Dev Disable: Res Rev 2002; 8:3.

33. Gonzalez A, Ortiz AC, Ingoyen A. Bacterial vaginosis a broad overview.Rev Latinoam Microbiol 1999; 41 (1): 25-34.

34.Goyal R, Sharma P,Kaur I, Agarwal N,Talwar V. Bacterial vaginosis and vaginal anaerobes in preterm labor. J Indian Med Assoc. 2004; Oct 102(10): 548-550.

35. Graham M, Levene MT et al. Prediction of cerebral palsy in very low birth weight infants: Prospective ultrasound study in very low birth weight infants. Lancet 1987; 2: 593-596.

36. Grant A, Penri ZJ, Street PJ. Elective or selective caesarean delivery of small baby: A systematic review of controlled trials. Br J Obstet Gynaecol. 1996; 103: 1197-2000.

37. Gravett MG, Hitti J, HessDL. Intrauterine infection and preterm delivery: Evidence for activation of the fetal hypothalamic-pituitary adrenal axis. Am J Obstet Gynecol. 2000; 182:1404.

38. Gravett MG, Hummel D, Eschenbach DA, Holmes KK. Preterm labor associated with subclinical amniotic fluid infection and with bacterial vaginosis. Obstet Gynecol. 1986; 67: 229-237.

39. Hack M, Breslau et al. The effect of very low birth weight and social risk on neurocognitive abilities at school age. J Dev Behav Pediatric. 1992; 18: 412-420.

40. Hack M, Fanaroff AA. Outcomes of extremely immature infants – a perinatal medicine. N Engl J Med. 1993; 329:1649-1650.

41. Heine RP, McGregar JA, Goodwin JM, et al. Serial Salivary estriol to detect an increased risk of preterm birth. Obstet Gynecol. 2000; 96:490.

42. Hickey CA, Cliver SP, Mcneal SF et al. Prenatal weight gain patterns and spontaneous preterm birth among non-obese black and white women.Obstet and Gynecol.1995; 85:905.

43. Hill GB, Eschenbach DA, Holmes KK. Bacteriology of the vagina.Scand J Urol Nephrol. 1984; 86:23-29.

44. Hillier SL, Nugent RP, Eschenbach DA et al. Association between bacterial vaginosis and preterm delivery of a low birth weight infant: The Vaginal Infections and Prematurity Study Group. N Engl J Med. 1995; 333; 1737-1742.

45. Hitti J, Murphy J et al. Amniotic Fluid Infection, Cytokines and adverse outcomes among infants at 34 wks gestation or less. Obstet Gynaecol. 2001; 98:1080.

46. Holst E,Goffeng AE,Andersch B. Bacterial vaginosis and vaginal microorganisms in idiopathic premature labor and association with pregnancy outcome.

47. Holzman C, Jetton J, Siler – Kodhar T. et al. Second trimester corticotrophin releasing hormone levels in relation to preterm delivery and ethnicity. Obstet Gynecol. 2001; 97:657.

48. Jacobbson B, Holst RM et al. Monocyte chemotactic protein 1 in cervical and amniotic fluid. Am J Obstet Gynecol. 2003; 189:1161.

49. James JD, Peaceman AM, Creasy RK, Prevention of Prematurity semen perinatol.1988; 12:280.

50. Janssens S. Beyaeret R: Roll of Toll – Like Receptors in Pathogen Recognition. Clin Microbiol Rev.2003; 16:637.

51. John P. Cloherty. Ann R. Stark. Manual of Neonatal Care. Asian Edition 1980; 78: 82.

52. Jotwani, B.Bhule, Kamal K, Deshmukh. Evaluation of perinatal morbidity and mortality in preterm babies. J Obst Gyn Ind.2001; 34:51.

53. Keelan JA, Helliwell RJ et al. Cytokines, Prostaglandins and parturition – a review placenta. 2003; 24: 533.

54. Kimberlin DF, Hauth JC, Owen J et al. Indicated Versus spontaneous preterm delivery. An evaluation of neonatal morbidity among infants weighing 1000gms at birth. Am J Obstet Gynecol. 1999; 180: 683.

55. Kingdom JCP, Morrison JJ. Prediction, Prevention and Management of preterm labor. Landon RCOG press PP148, 1995.

56. Konte JM, Creasy RK. Short term neonatal morbidity associated with preterm birth. Am J. Perinatal. 1986: 3283-288.

57. Kuben KCK, Leviton A. Cerebral Palsy. N Eng J Med. 1994; 330:188-195.

58. Kukkad, Mashalkar et al. A study outcome of management of premature babies born in Vivekananda Hospital Latur (1994-1998). J Obstet Gynecol India. 2001; 67:51.

59. Lamont RF, Chen BM. Use of Antibiotics in prevention of preterm birth. Progress in O & G vol 13, 1998: 141-152.

60. Leitich H, Brunbauer M et al. Antibiotic treatment of bacterial vaginosis in pregnancy: a metanalysis. Am J Obstet Gynaecol. 2003; 188: 752-758.

61. Lockwood CJ. Stress associated preterm delivery: The role of corticotrophin releasing hormone. Am J Obstet Gynaecol. 1999; 186:5264.

62. Loudon JA, Groom KM, Bennett PR. Prostaglandin inhibitors in preterm labor. Best Pract Res Clini Obstet Gynecol. 2003; 17: 731.

63. Luke B, Mamelle N, Keith L et al. The association between occupational factors and preterm birth. Am J Obstet Gynaecol.1995; 173: 849.

64. Lumely J. The epidemiology of preterm birth. Balliere's Clin Obstet Gynecology.1993; 7 (3):477-498.

65. Mac Donald HM, Jolley. Brit J Obstet Gynecol. 1991; 98:427.

66. MacGrath S, Smith R. Prediction of preterm delivery using plasma corticotrophin releasing hormone and other biochemical variables. Ann Med. 2002; 34:28.

67. Malik S, Mir N. Asia Oceania J. Obst and Gyn.1992; 18: 45.

68. Martin DH, Eschenbach DA et al. Double blind placebo-controlled treatment trial of C.trachomatis endocervical infections in pregnant women. Inf Dis Obstet Gynecol. 1997; 5:10-17.

69. Masfari AN. Duerden B, Kinghorn GI. Quantitative studies of vaginal bacteria.Genitourin Med 1986; 62: 256-263.

70. Mattison DR, Damus K, Fiore E, et al. Preterm delivery a public health prespective. Paediatr Perinat Epidemol. 2001; 15 (Suppl2) 7-16.

71. Mc Collum K, Chung E, Culhane J. Maternal depressive symptomatology and preterm birth (<35 weeks gestation) among low income women. Am J Obstet Gynecol. 2003; 189:515a.

72. Mc Cornick MC. The contribution of low birth weight to infant mortality and childhood morbidity.N Engl J Med 1985; 312: 82-90.

73. McGregor JA, Jackson GM, Lachelin GC et al. Salivary estriol as risk assessment for preterm labor: a prospective trial. Am J Obstet Gynecol. 1995; 173:1337.

74. Mc Lean M, Bists A, Davies J et al. A placental clock controlling the length of human pregnancy. Nat Med. 1995; 1: 460.

75. Meis PJ, Goldenberg RL, Mercer BM et al. The preterm prediction study: Risk factors for indicated preterm births. Am J obstet Gynecol. 1998; 178: 562.

76. Meis PJ, Michielutte R, Peters TJ et al. Factors associated with preterm in Cardiff, Wales, I.Univariable and multivariable analysis. Am J Obstet Gynaecol. 1995b; 173: 590.

77. Mercer BM. Preterm premature rupture of membranes. Obstet Gynaecol. 2003; 101: 178.

78. Mercer BM, Ahokas R, Beazley D et al. Corticol, ACTH and psychosocial stress in women at high risk for preterm birth. Am J Obstet Gynaecol. 2002; 187: 572.

79. Moller M, Thomsen AC, Borch K et al. Rupture of fetal membranes and premature delivery associated with group B streptococci in urine of pregnant women. Lancet 1984;2: 69-70.

80. Neggers Y, Golden berg R, Cliver S. et al. Effect of domestic violence on preterm birth and low birth weight. Acta Obstet Gynecol Scand. 2004; 83: 455.

81. Nelson LH, Anderson RL O'shea M, et al. Expectant management of preterm premature rupture of membranes. Am J Obstet Gynecol. 1994; 171: 350.

82. Omer H, Everly GS Jr. Psychological factors in preterm labor critical review and theoretical analysis. Am J Psychiatry 1988; 145: 1507-1513.

83. Park KH, Chaiwerapong Sa T, Kim YM et al. Matrix metalloproteinase 3 in parturition: Premature rupture of the membranes and microbial invasion of the amniotic cavity. J. Perinat Med. 2003; 31:12.

84. Quigley ME, Sheehan KL, Wilkes MM et al. Effects of maternal smoking on circulating catecholamine levels and fetal heart rates. Am J Obst Gynecol.1979; 133: 685-690.

85. Regan JA, Chao S, James CS. Premature rupture of membranes, preterm delivery and group B streptococcal colonization of mothers. Am J Obstet Gynecol. 1981; 141: 184-186.

86. Regan JA, Klenbanoff MA, Nergent RP. Am J Obstet Gynecol. 1996; 174: 1354.

87. Rennie JM. Perinatal statistics report (1985-1992), Rosie Maternity Hospital, Cambridge, UK, 1993.

88. Riedel F. Long term effects of artifical ventilation in neonates. Acta Pediatric Scand 1987; 76:24-29.

89. Romero R, Mazor M, Oyarzun et al. Is there an association between colonization with Group B streptococcus and prematurity? J Reprod Med. 1989; 34:797-801.

90. Romero R, Mazor M. infection and preterm labor. Clin Obstet Gynecol 1988; 31: 553-584.

91. Schrag SJ, Zywicki S, Farley M et al. Group B streptococcal disease in the era of intra partum antibiotic prophylaxis. N Engl J Med. 2000; 342:15-20.

92. Scott A, Sullivan and Roger Newman. Prediction and prevention of preterm delivery in multiple gestations. Clinic Obstetrics and Gynecology 2004; 47: 203-215.

93. Siegel JD, Mc Cracken GH Jr. Sepsis neonatorum. N Engl Med. 1981; 304: 642-647.

94. Suarez A, Rico F,Clavero- Nunez JA et al. Amniotic fluid catecholamine metabolites in maternal smoking.Gynecol Obstet Invest. 1990; 30: 143-146.

95. Subtil D, Denovit v, LeGoueff F,Husson MO,Triver D. The role of bacterial vaginosis in preterm labor and preterm birth: a case control study.Eur J Obstet Gynecol Reprod Biol. Feb. 2002; 10:101 (1): 41-46.

96. Thomsen AC, Morup L, Hansen KB, Antibiotic elimination of Group B Streptococci in urine in prevention of preterm labor Lancet. 1987;1: 591-593.

97. Venkat Shobha, Nayyar Roshni, Bhat Jaya. Retrospective analysis of spontaneous vs. induced preterm deliveries and neonatal outcome. J Obstet Gynecol, India 2003; 46: 53.

98. Wadhwa PD, Culhane JF, Rauh V, et al. Stress and preterm birth: Neuro endocrine, Immune / inflammatory and vascular mechanisms. Maternal Child Health J. 2001: 119.

99. Weiss JL, Malone FD, Vidaver J, et al. Threatened abortion: A risk factor for poor pregnancy outcome, a population based screening study. Am J Obstet Gynecol. 2004; 190: 745.

100. Yost NP, Oweh J, Berghella V.Effect of coitus on recurrent preterm birth. Obstet Gynecol. 2006; 107 (4): 793-797.

101. Young A, Thomson AJ et al. Immunolocalisation of proinflammatory cytokines in myometrium, cervix and fetal membranes during human parturition at term. Biol Reprod. 2002; 66: 445.

102. Zeiliri J, Ancel Py, Larrouque B, Kaminiski M .EPIPAGE Study. Br J Obs Gyn. 2005; 112: 4:130.

PROFORMA

Name :

Age :

IP no. :

Occupation :

Education :

Address :

Socioeconomic status :

Obstetric code :

Booked : Yes/ No

LMP : Cycles: Regular/ Irregular

EDD : Dating Scan

Date of admission :

Duration of gestation :

Date of discharge :

Type of preterm : 1. Spontaneous
2. Induced (and indication)

Presenting complaints :

1. Pain
2. Draining PV
3. Duration of draining PV
4. Fever
5. Discharge PV
6. Dysuria

Antenatal history :

First trimester – Threatened abortion
Bleeding PV

Second trimester

Third trimester

Past obstetric history :

Previous preterm birth

Previous abortion

Previous PROM

Use of steroids :

Antibiotics :

Microbiological examination: Vaginal smear from –

Time of collection –

Vaginal P^H

Isolate on blood agar culture –

Wet mount preparation

On addition of 10% KOH

NEONATAL OUTCOMES:

Respiratory Distress Syndrome

Meconium Aspiration

Convulsion

Sepsis

Superficial skin infection

Neonatal jaundice

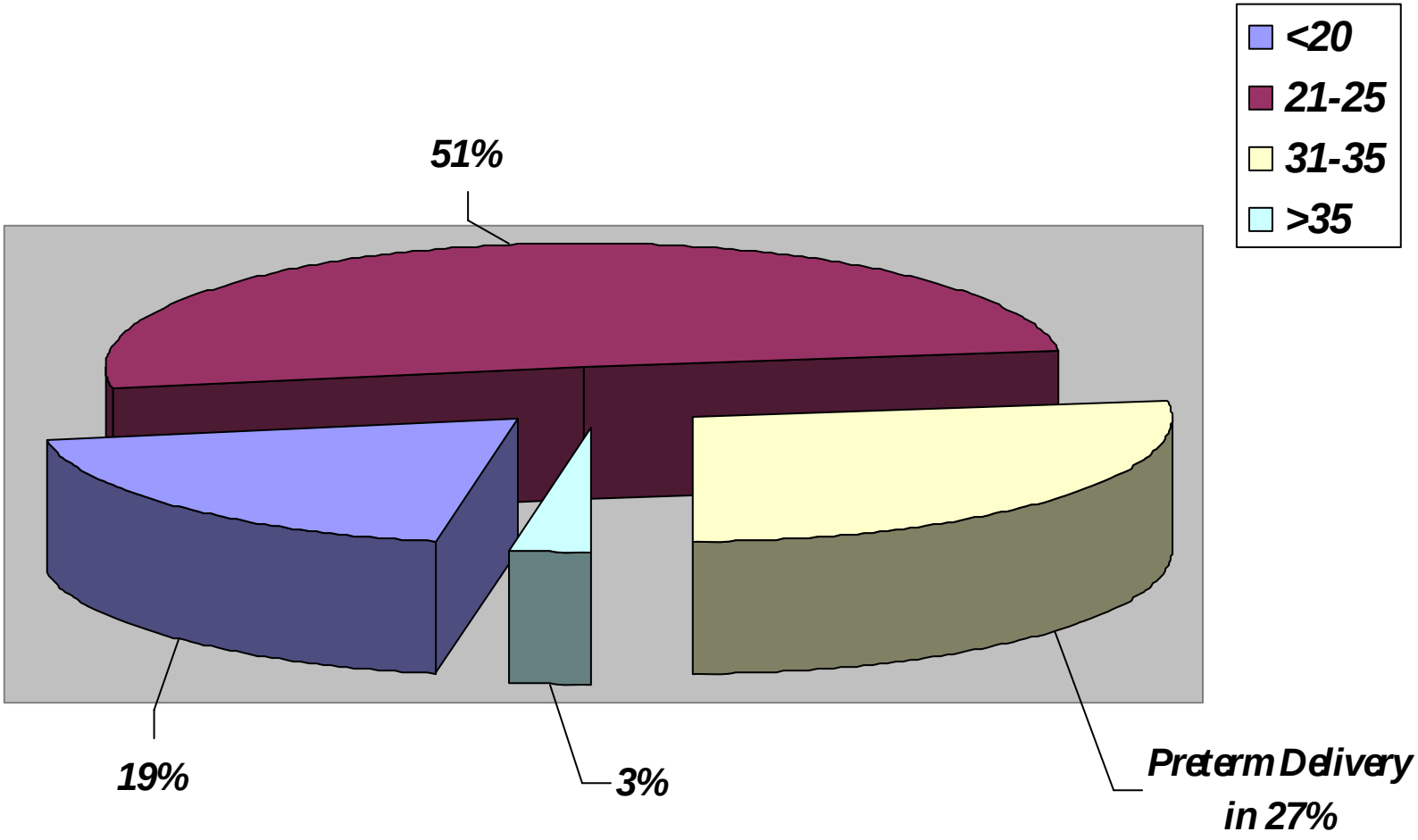
Number of days in preterm care

Condition of baby at discharge

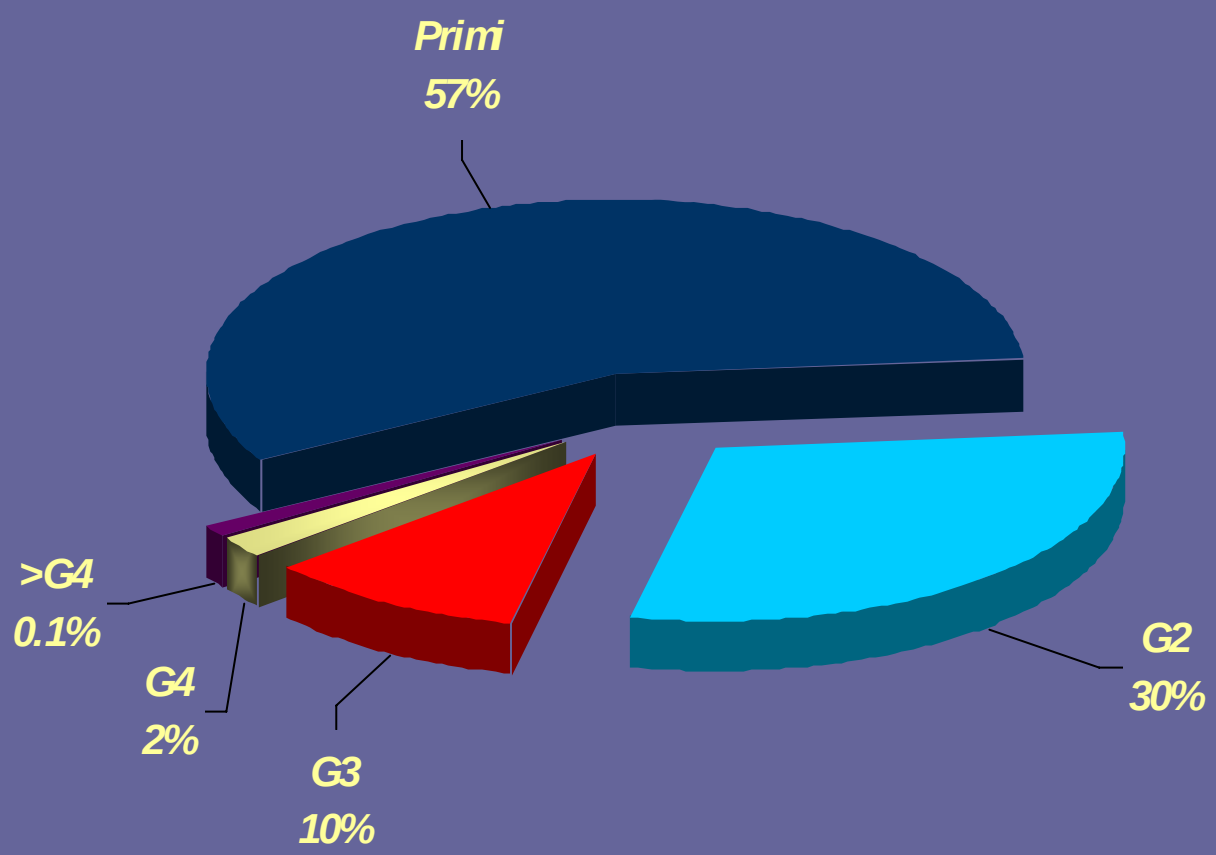
Condition of baby at one month

Neonatal mortality

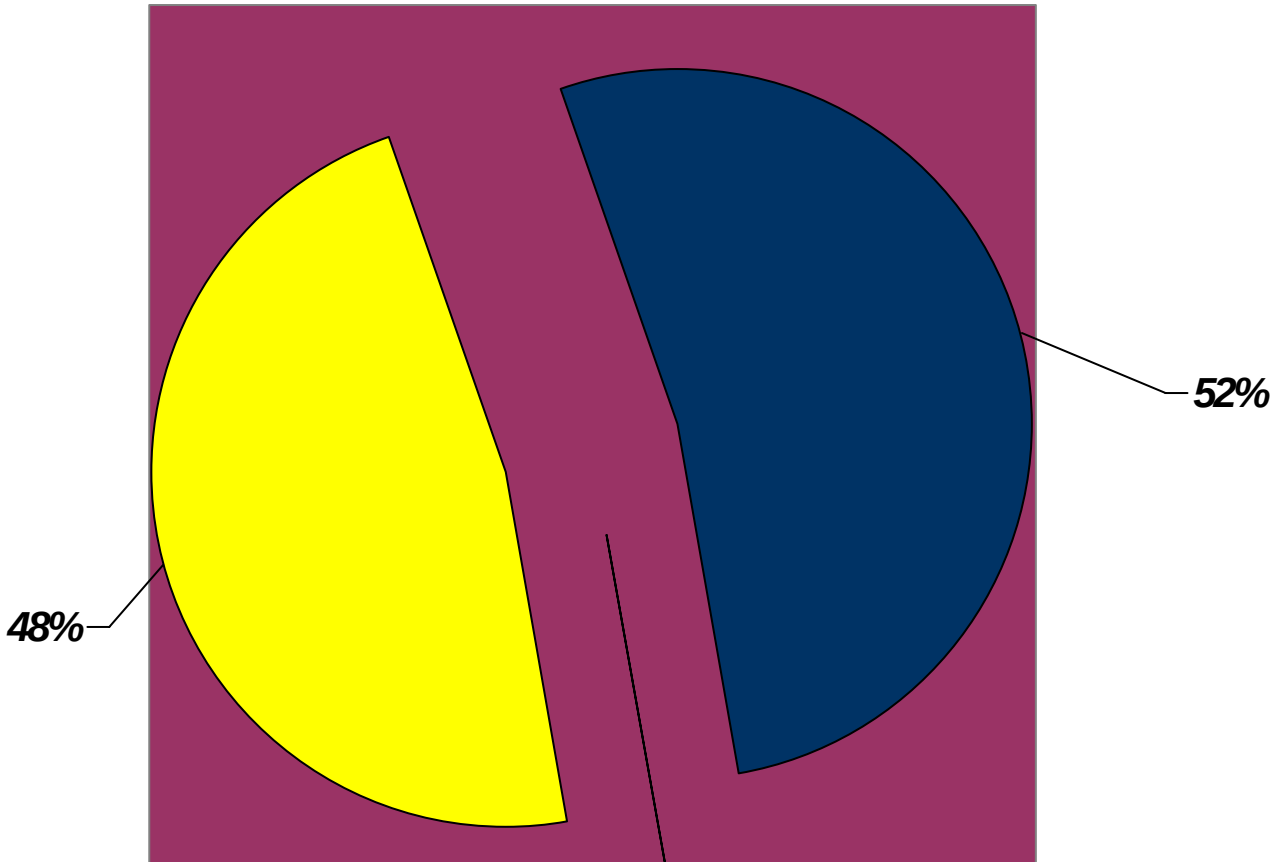
AGE DISTRIBUTION IN CASES



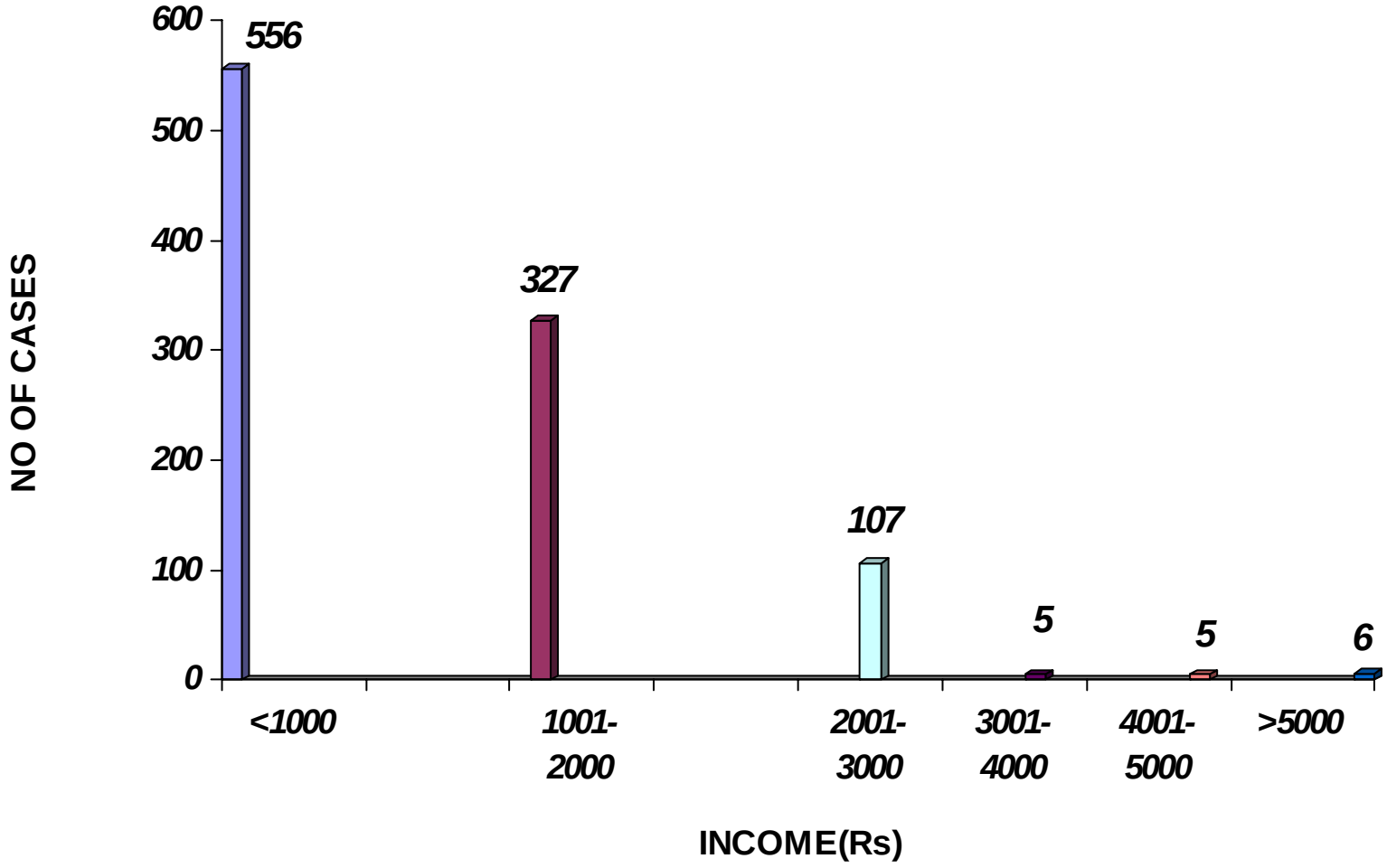
DISTRIBUTION OF CASES WITH PARITY



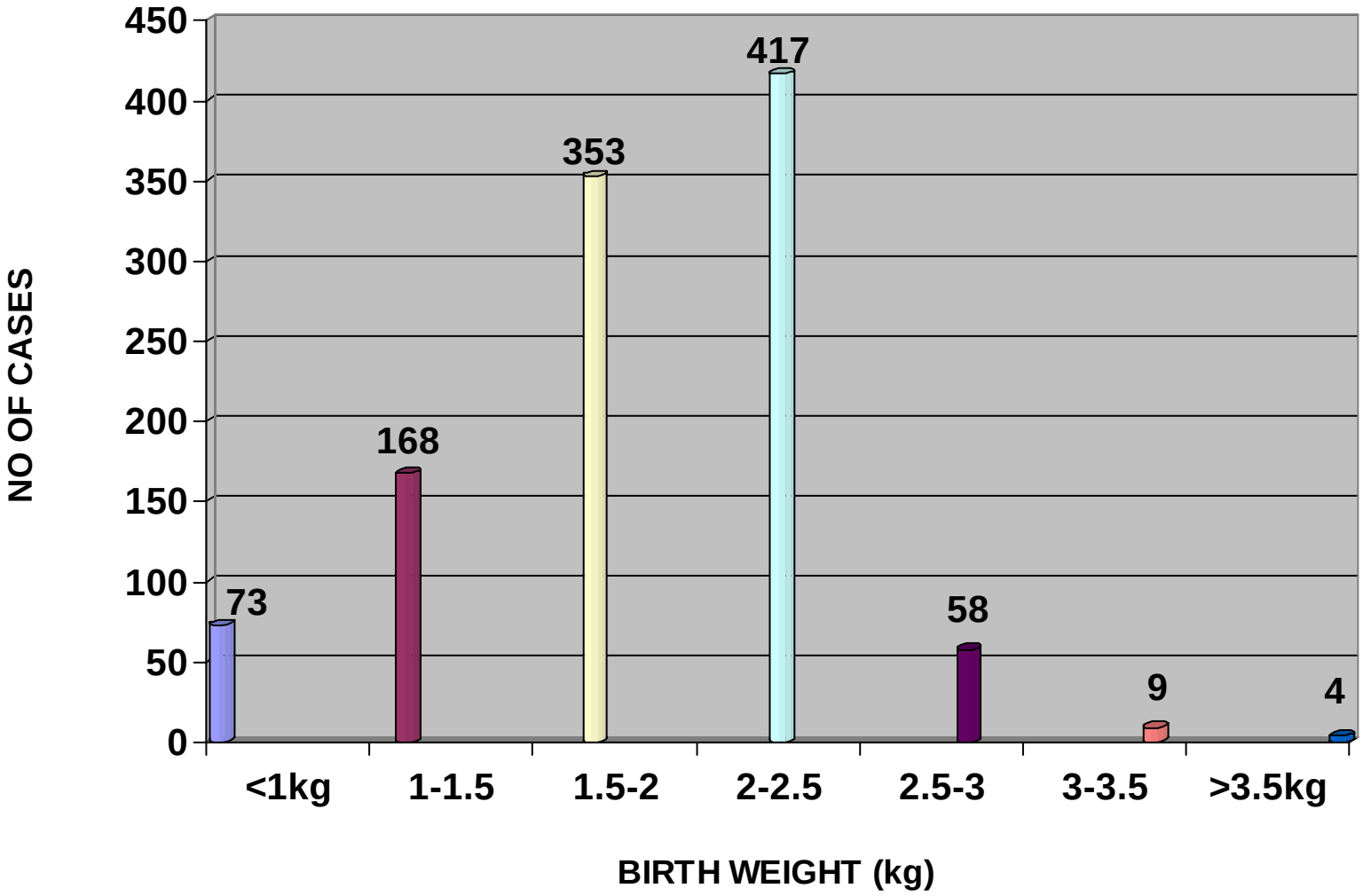
DISTRIBUTION OF CASES DEPENDING ON ANTENATAL CARE



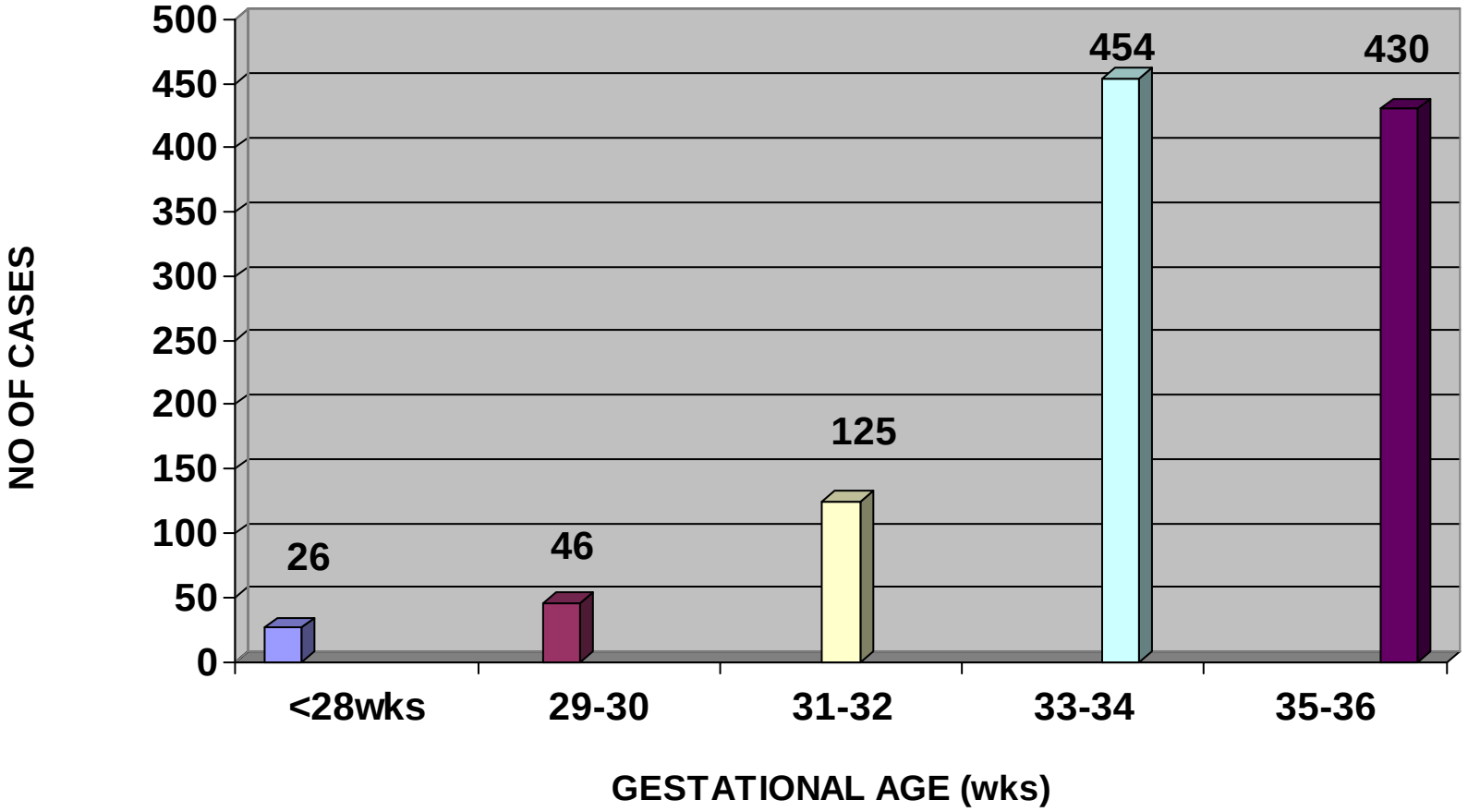
DISTRIBUTION OF CASES ACCORDING TO SOCIOECONOMIC CLASS



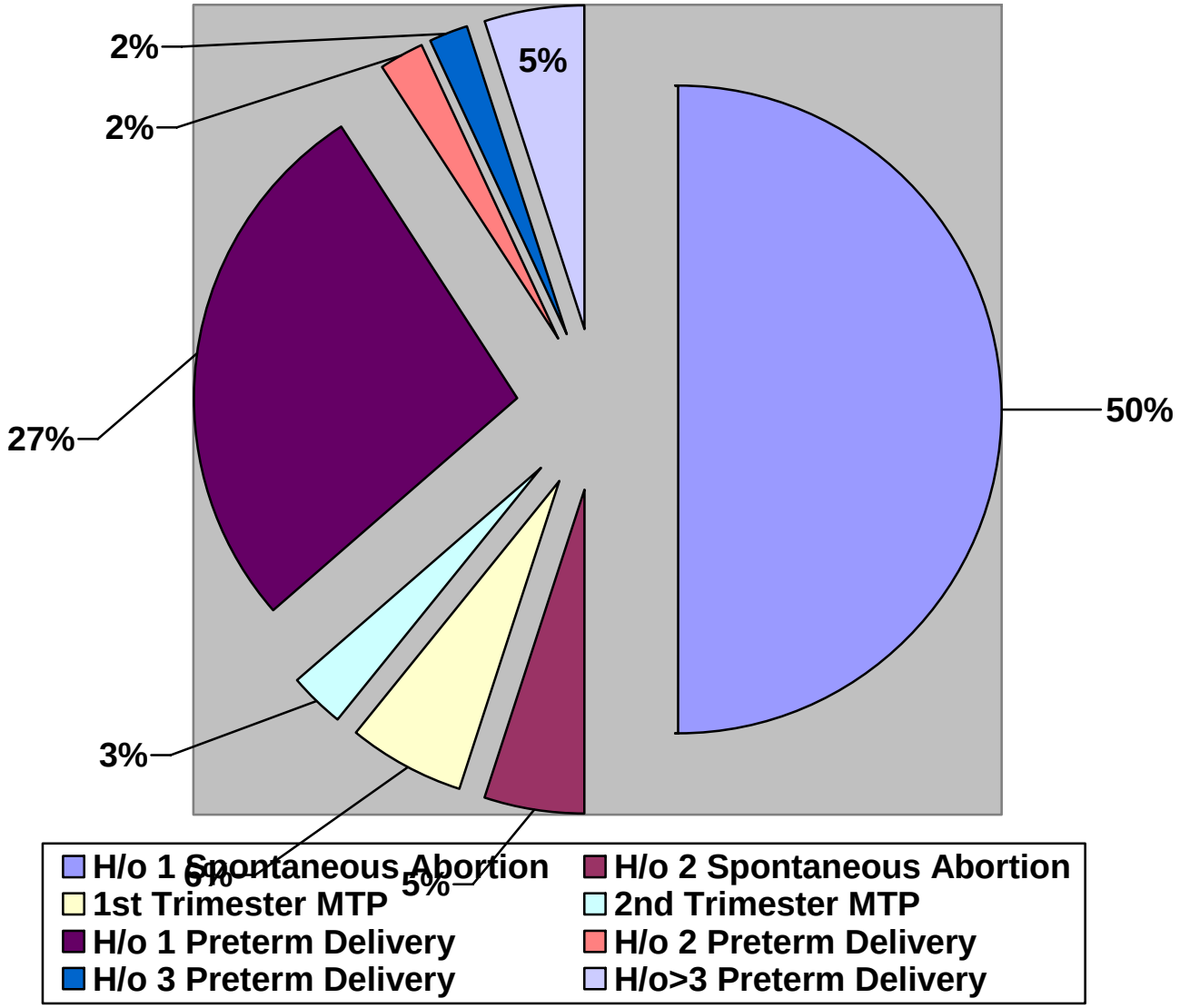
DISTRIBUTION OF CASES ACCORDING TO BIRTH WEIGHT



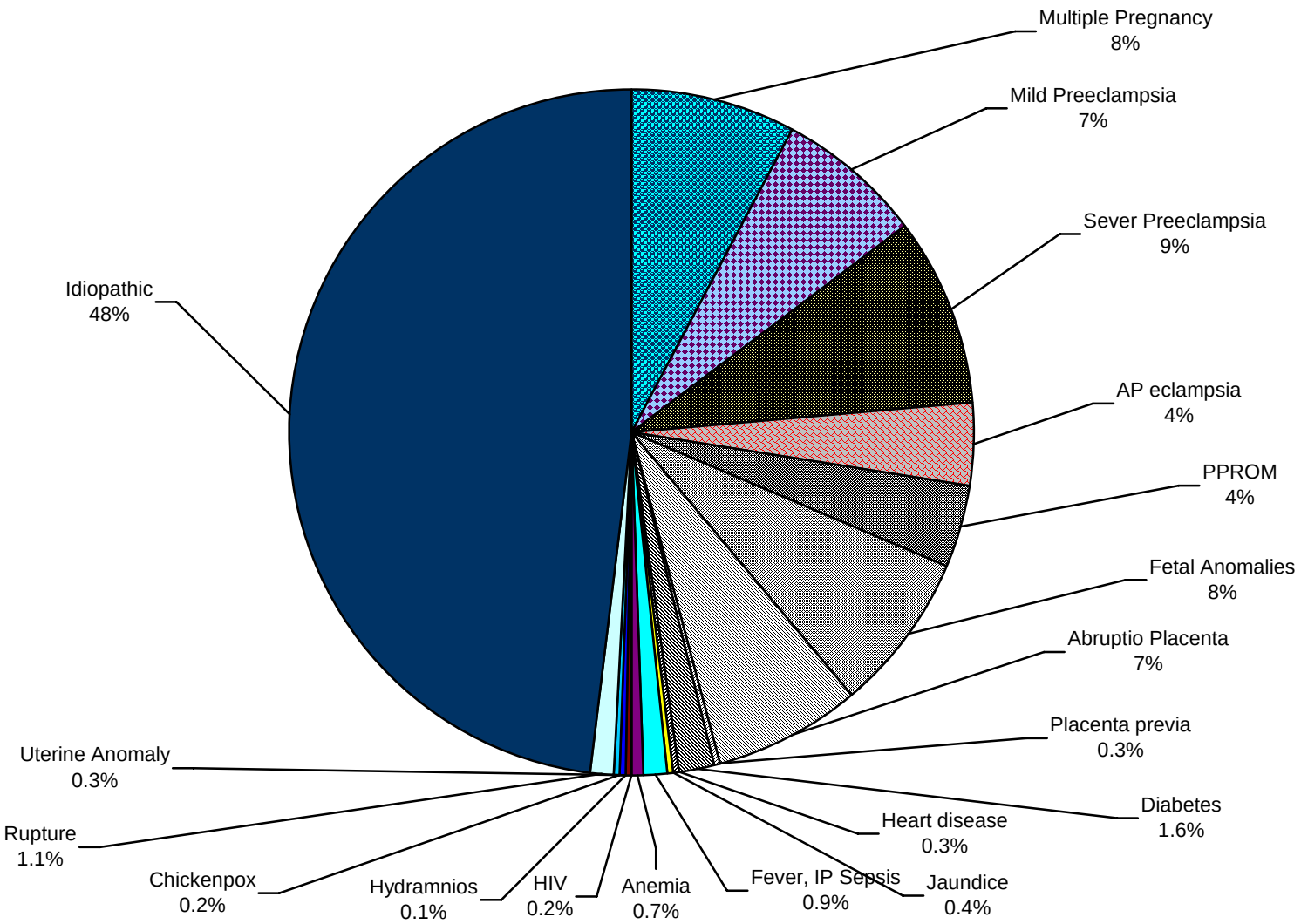
DISTRIBUTION OF CASES ACCORDING TO GESTATIONAL AGE



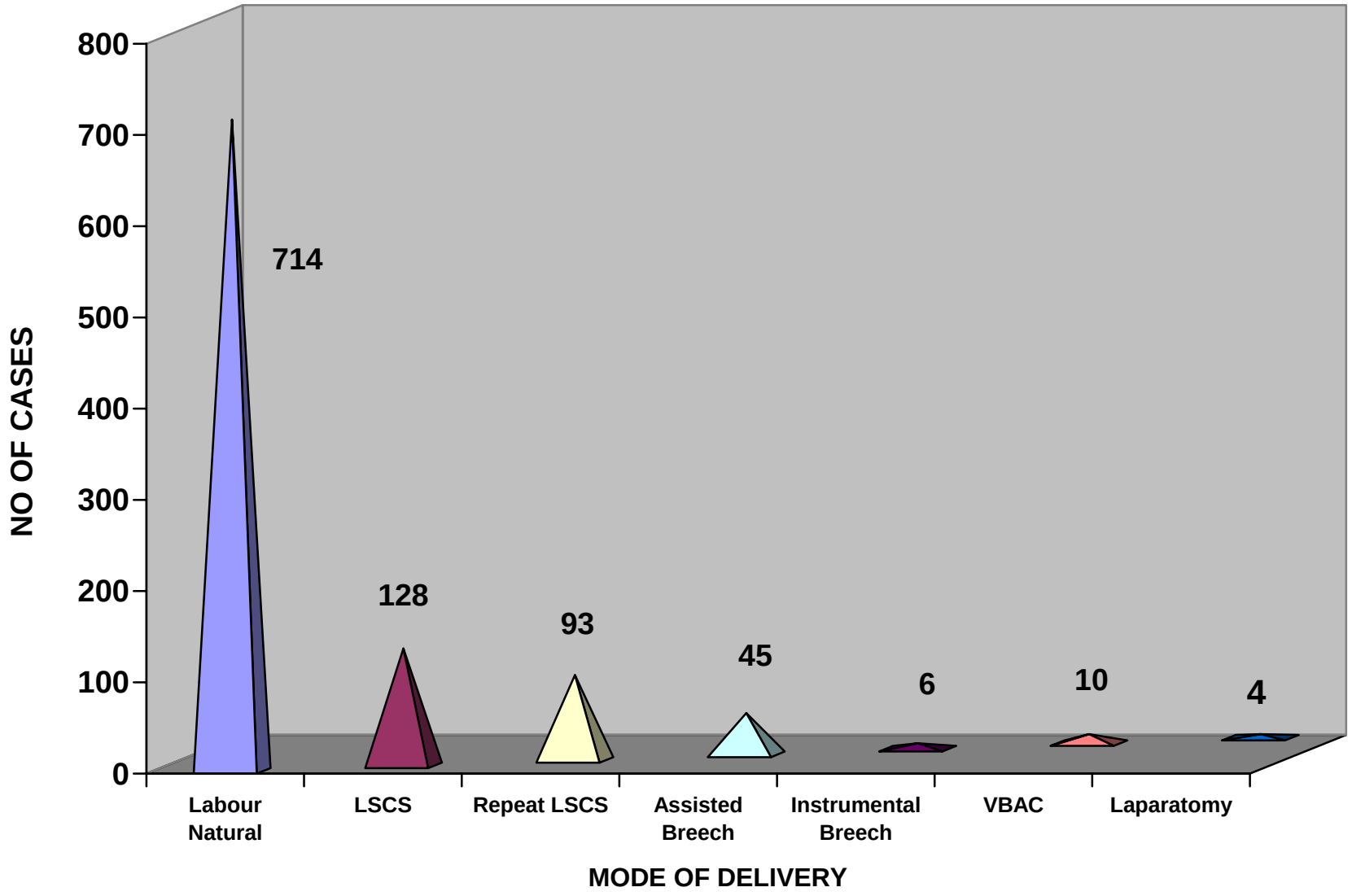
DISTRIBUTION CASES WITH RESPECT TO PREVIOUS BAD OBSTETRIC HISTORY



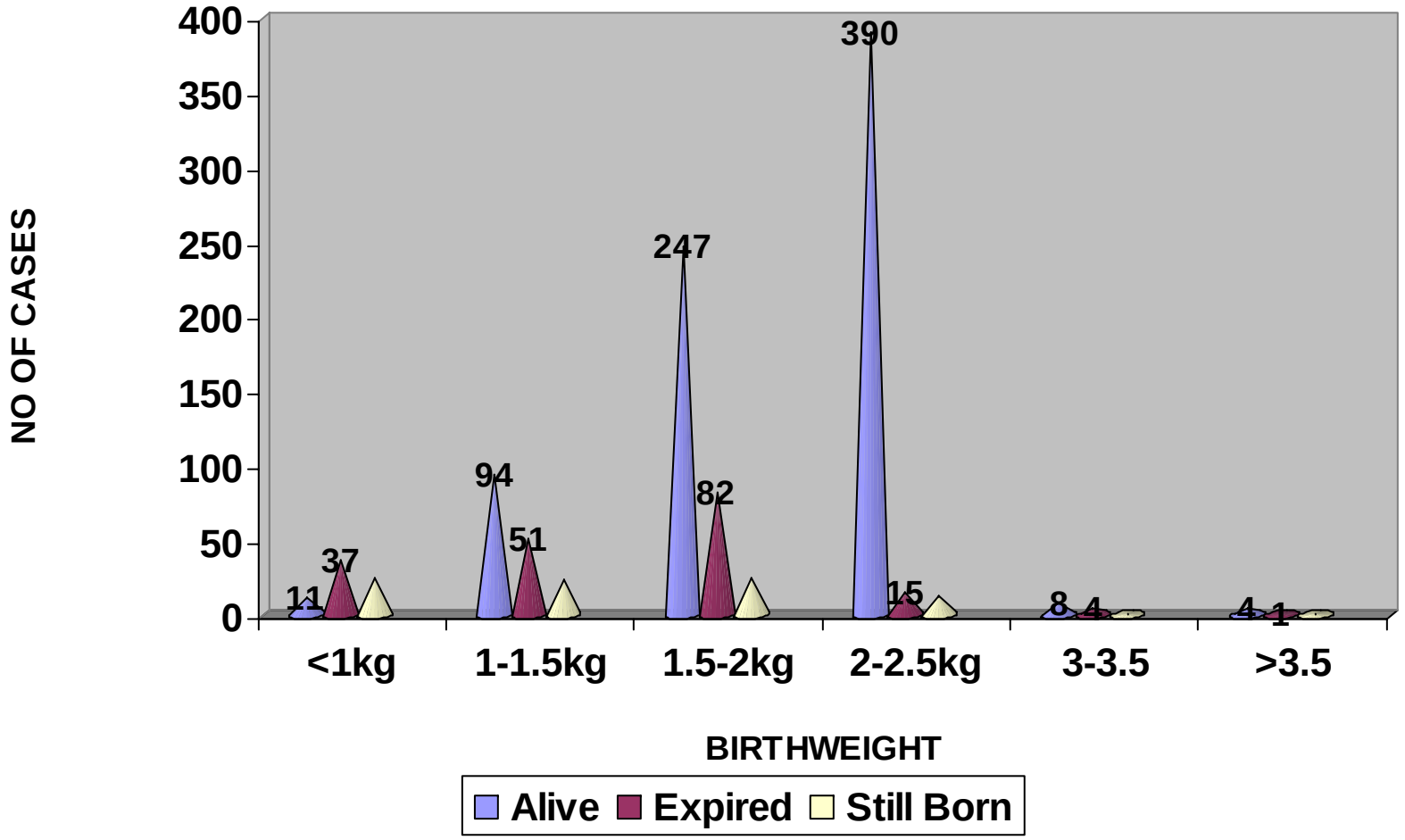
DISTRIBUTION OF CASES ACCORDING TO ETIOLOGY



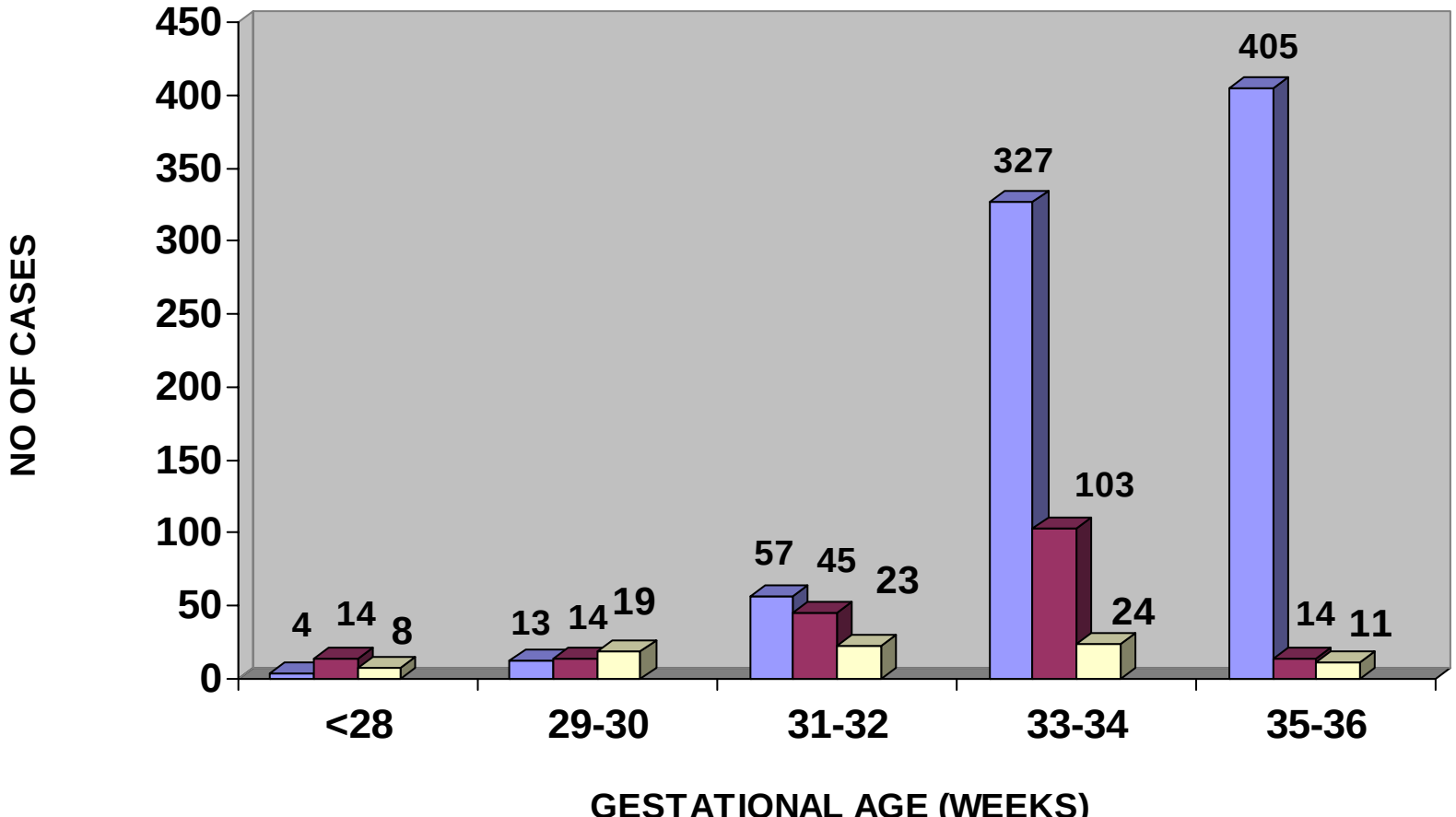
DISTRIBUTION ACCORDING TO MODE OF DELIVERY

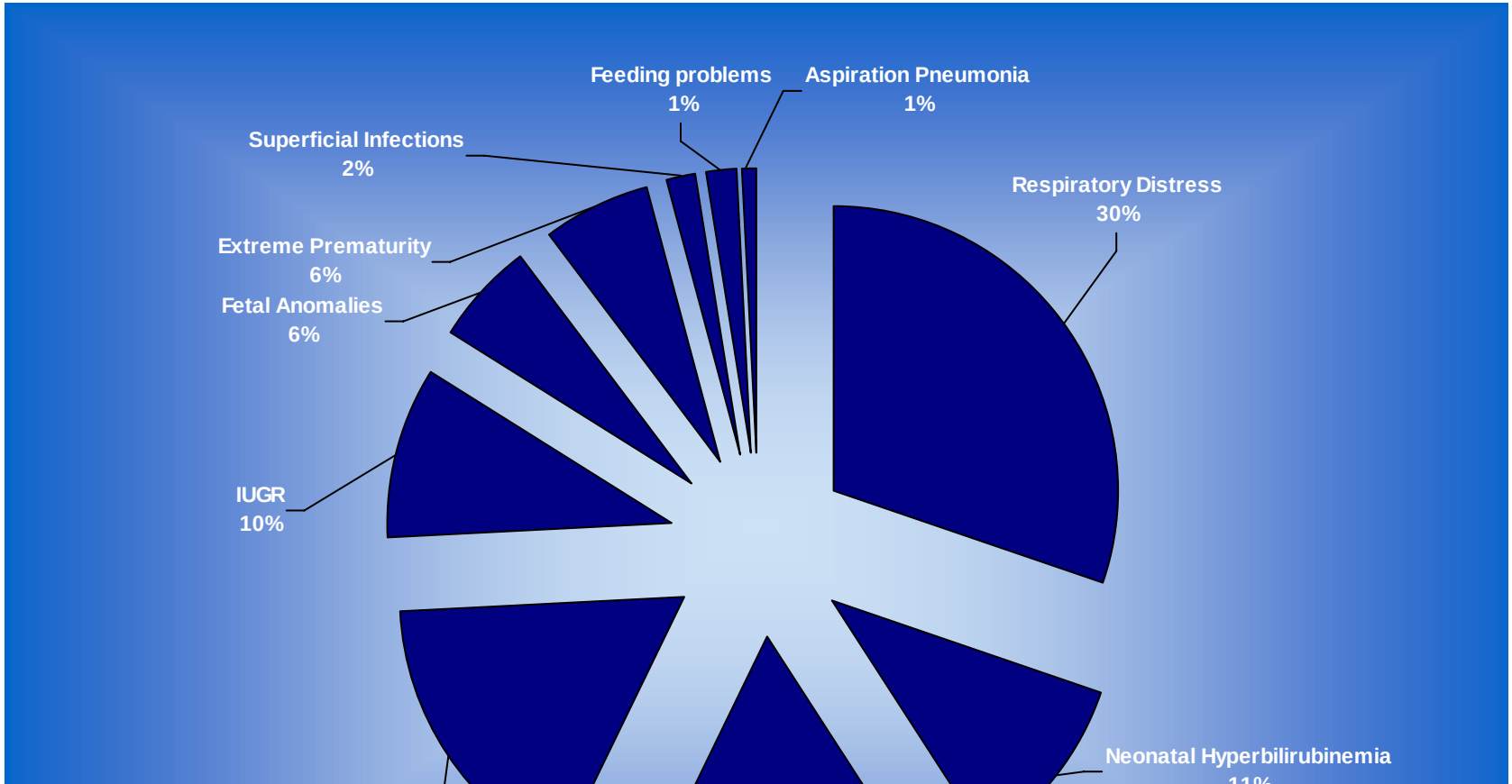


CORRELATION OF PERINATAL MORTALITY RATE WITH BIRTH WEIGHT

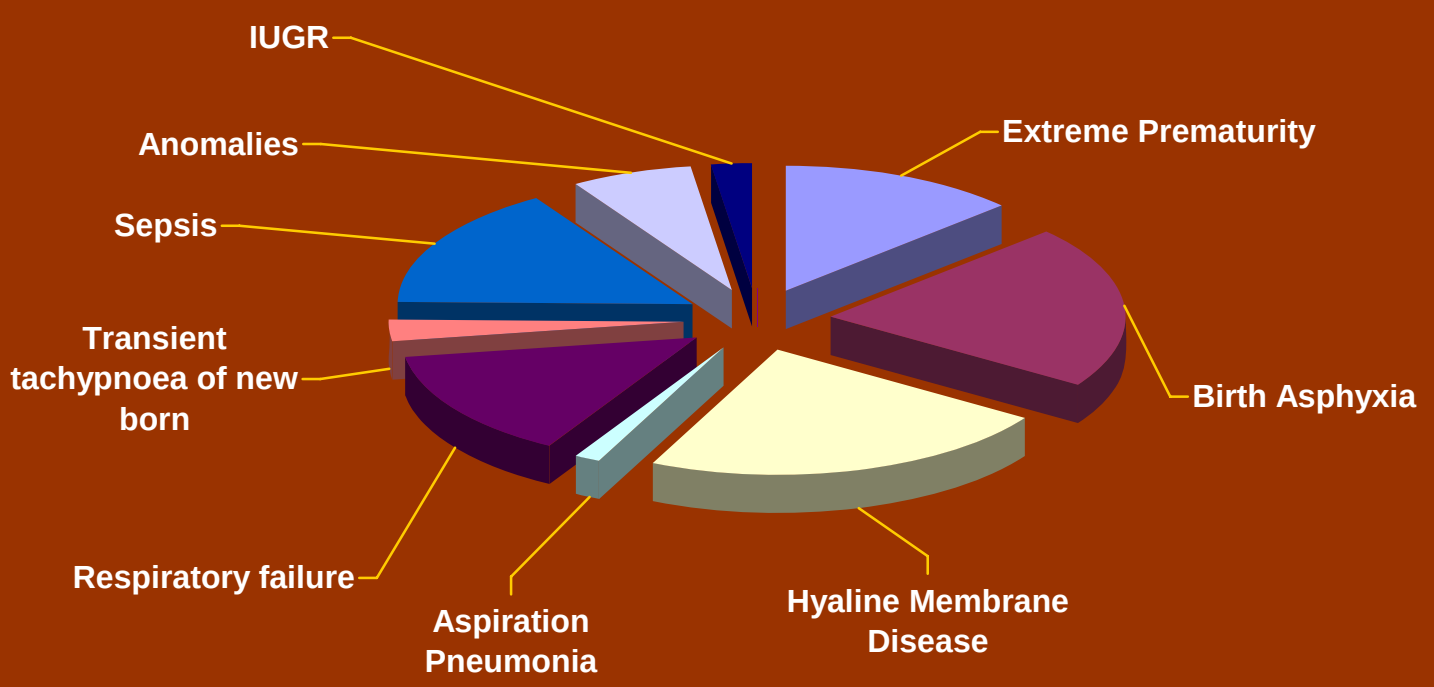


CORRELATION OF PERINATAL MORTALITY RATE WITH GESTATIONAL AGE

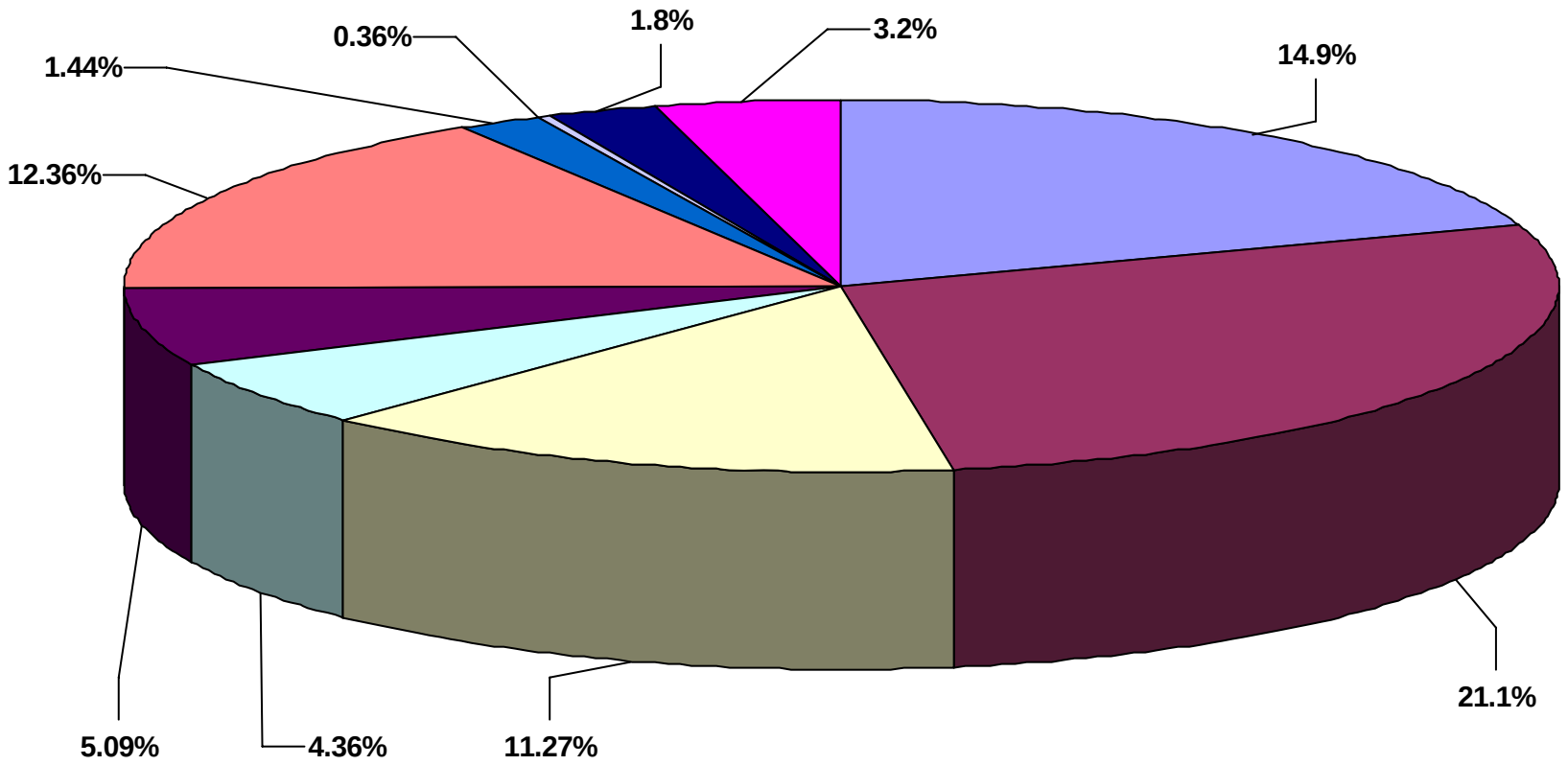



Feeding problems
1%
Aspiration Pneumonia
1%
Superficial Infections
2%
Respiratory Distress
30%
Extreme Prematurity
6%
Fetal Anomalies
6%
IUGR
10%
Neonatal Hyperbilirubinemia

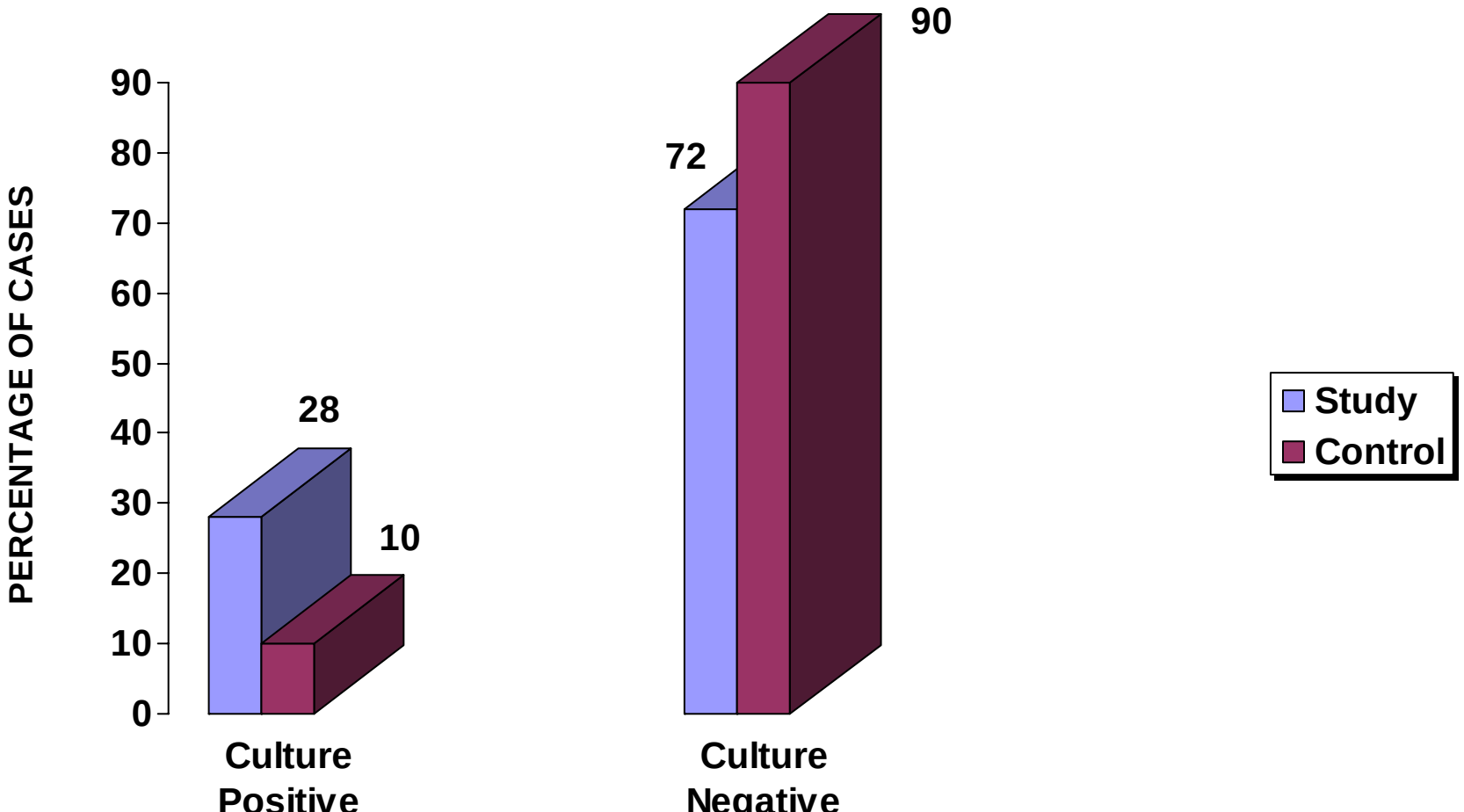
CAUSE OF EARLY NEONATAL DEATHS



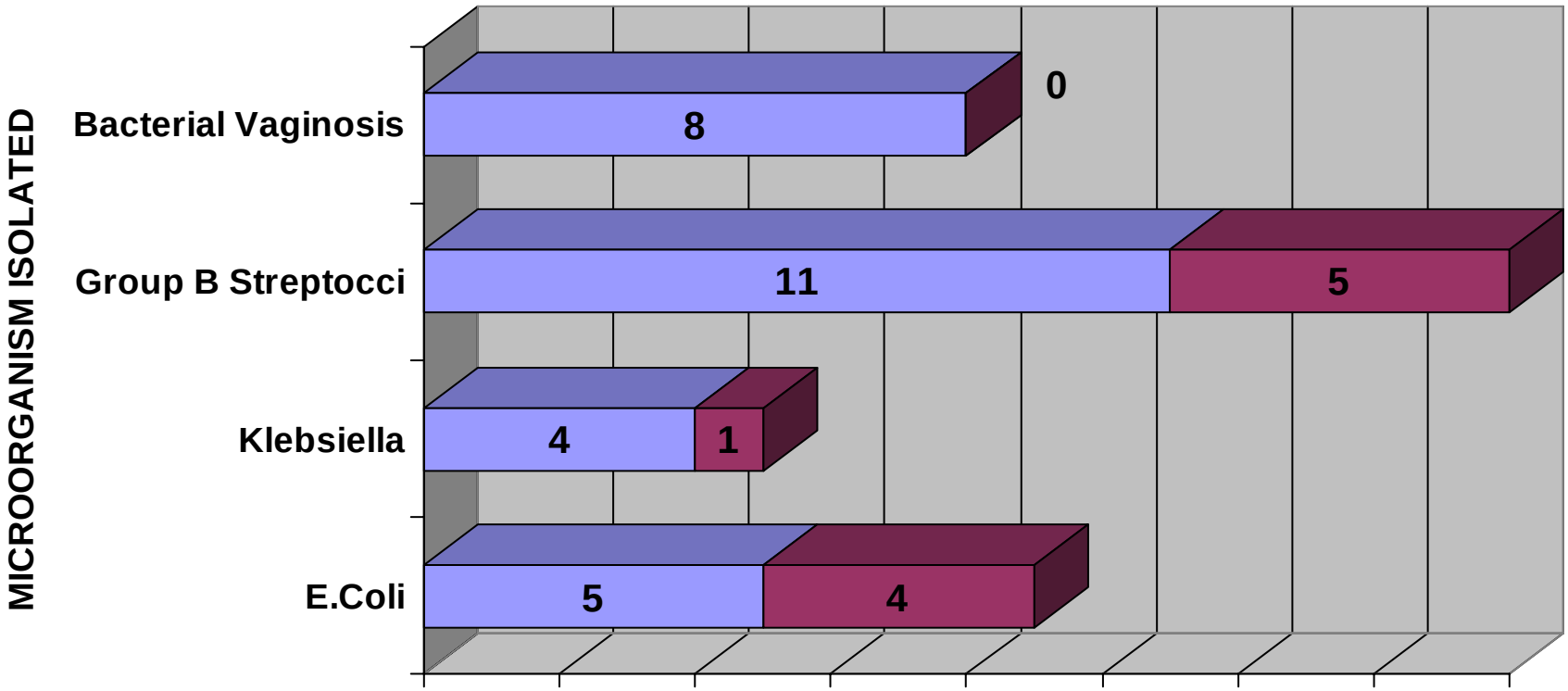
ASSOCIATION OF OBESTETRIC COMPLICATIONS WITH PERINATAL MORTALITY IN PRETERM LABOUR



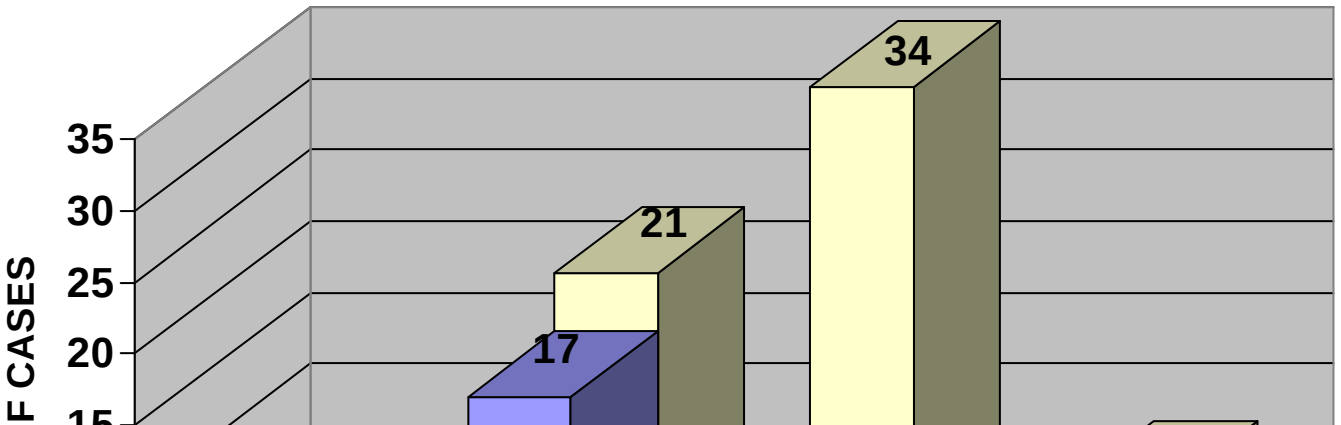
INCIDENCE OF INFECTIONS IN PATIENTS WITH PRETERM LABOUR AND CONTROLS

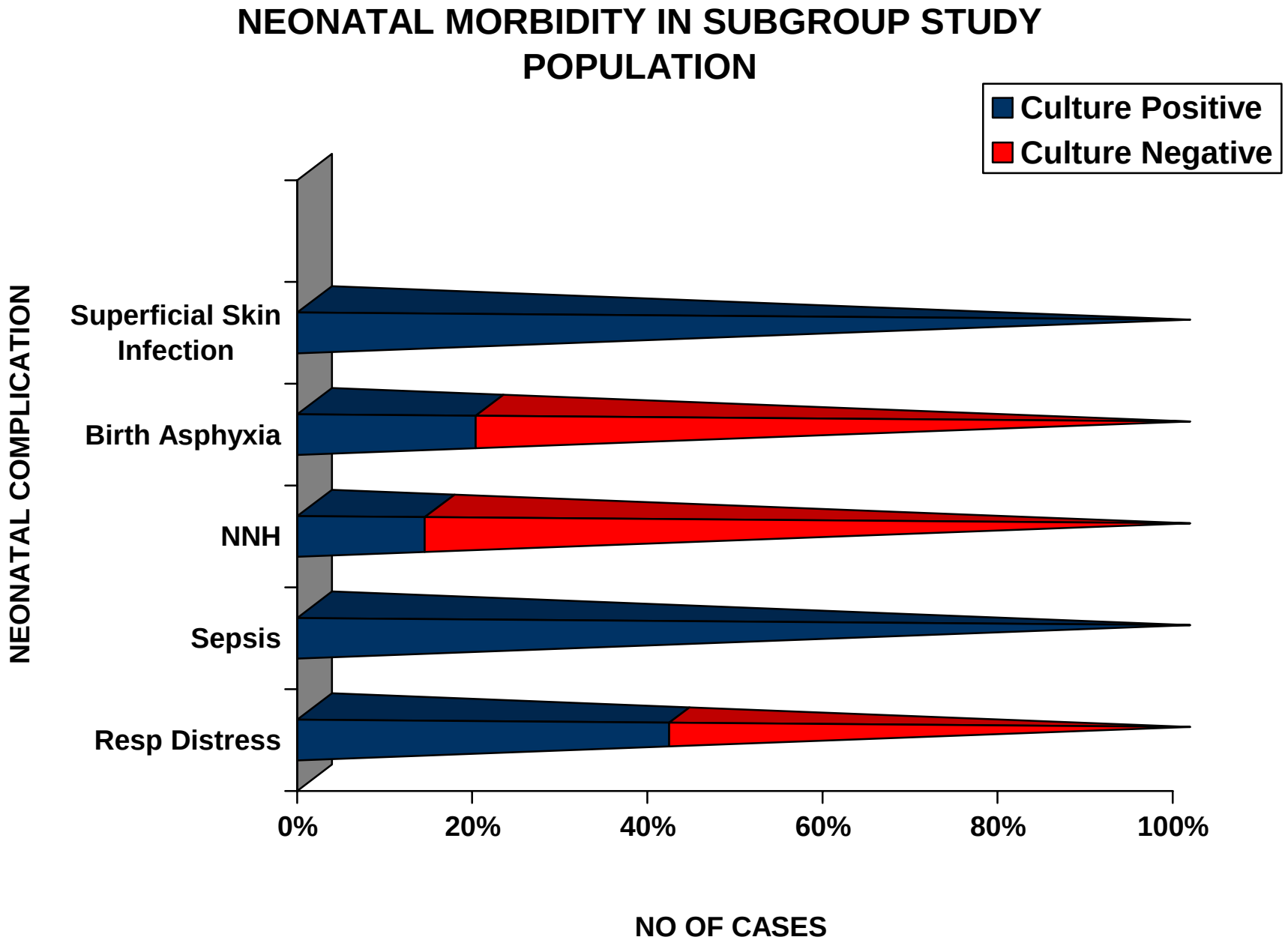


DISTRIBUTION OF MICROORGANISMS IN PATIENTS WITH PRETERM LABOUR AND CONTROL

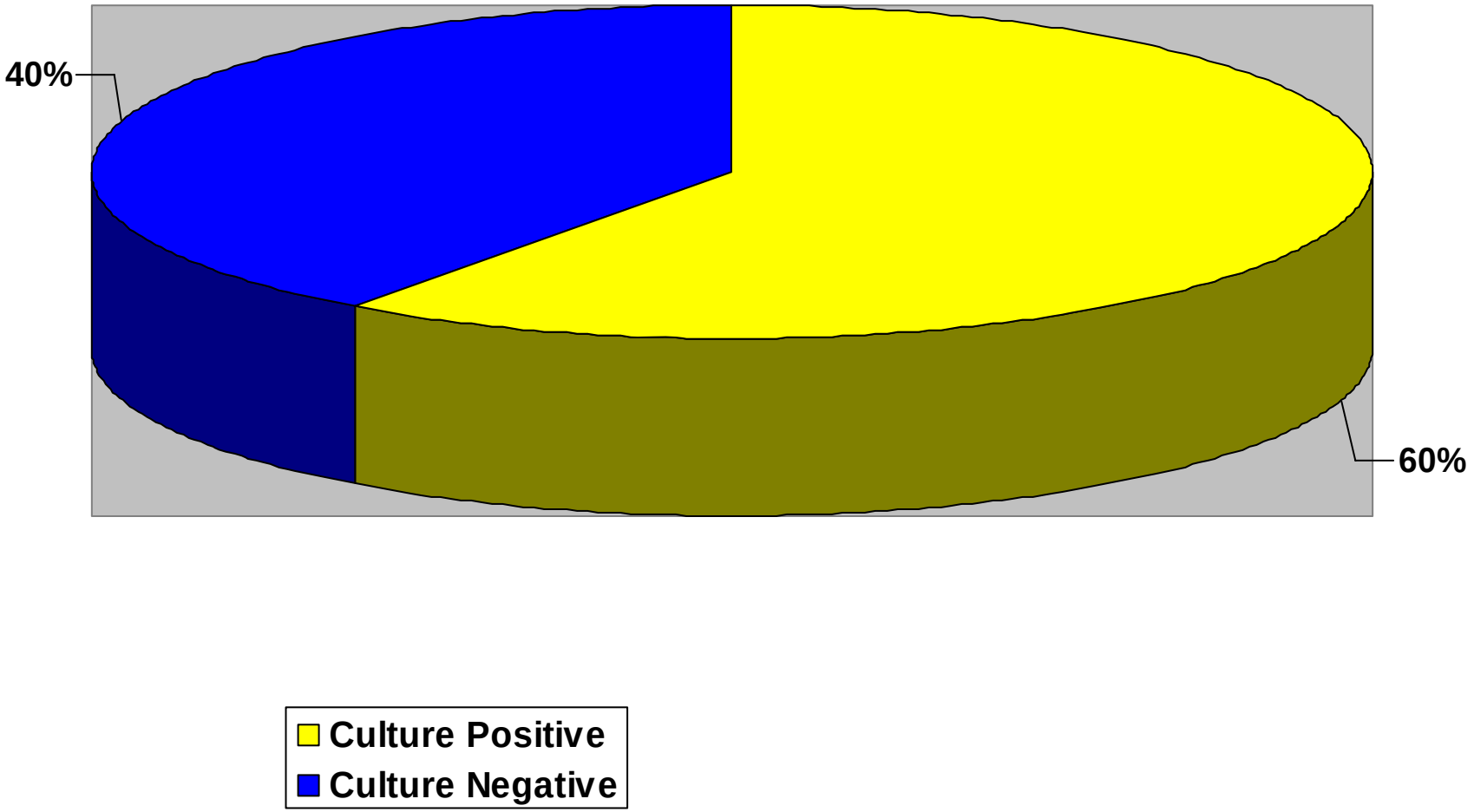


Birth Weight of Fetuses in SubGroup Study Population




NEONATAL MORBIDITY IN SUBGROUP STUDY POPULATION
Culture Positive
Culture Negative
NEONATAL COMPLICATION
Superficial Skin Infection
Birth Asphyxia
NNH
Sepsis
Resp Distress
0%
20%
40%
60%
80%
100%
NO OF CASES

NEONATAL MORTALITY IN SUBGROUP STUDY POUPLATION



S.No.	Name	Age	B/UB	Occupatior	Parity	Previous O	GA by Date	GA by USC
1	Subitha	24		Coolie 800	Primi		36	35
2	Ramya	20		Coolie 100	Primi		34	34
3	Rajeswari	24		Tailor 1200			34	34
4	Dhanalaksl	29		Coolie 600			36	36
5	Kalaivani	23		Coolie 800			34	34
6	Chandra	21		Coolie 800	Primi		36	
7	Dhanalaxm	28		Electrician	900		32	
8	Parvathy	19		Coolie 800	Primi		34	
9	Indumathy	19		Coolie 100	Primi		34	
10	Lakshmi	33		Coolie 800			35	
11	Kowsalya	19		Coolie 800	Primi		35	35
12	Valli	19		Driver 100	Primi		35	36
13	Saleem	28		Coolie 800	Primi		35	34
14	Suguna	20		Coolie 600			36	36
15	Loganayak	24		Coolie 800			32	32
16	Anandhi	30		Coolie 600	Primi		32	32
17	Nithya	23		Coolie 800			34	34
18	Thabasunis	22		Driver 100	Primi		34	
19	Regina	25		Coolie 800			36	
20	Renuka	25		Coolie 600			36	35
21	Jeraldill	31		Coolie 800			30	
22	Reyasnisha	19		Coolie 600	Primi		34	34
23	Jyothi	20		Coolie 700	Primi		34	34
24	Gowri	30		Driver 800			34	
25	Sudha	22		Coolie 800	Primi		36	35
26	Devi	27		Coolie 800			36	
27	Banupriya	19		Coolie 800			36	
28	Rathnakum	22		Coolie 600	Primi		36	35
29	Vijayalaksh	22		Coolie 800	Primi		36	
30	Karpagam	20		Coolie 800			30	30
31	Anusuya	21		Export	1800		33	
32	Kalaiselvi	21		Coolie 800	Primi		35	34
33	Vijayalaksh	23		Coolie 600			34	
34	Hema	26		Coolie 800	Primi		34	34
35	Nirmala	28		Coolie 600			35	
36	Jothilakshn	26		Coolie 800			35	
37	Getzy	21		Coolie 800	Primi		36	35
38	Lakshmi	21		Coolie 600			34	34
39	Malathy	22		Coolie 800	Primi		32	32
40	Punithavall	25		Coolie 800	Primi		34	33
41	Seliv	25		Tailor 180	Primi		34	33
42	Malar	28		Coolie 800			34	34
43	Muthu	27		Coolie 800	Primi		35	35
44	Mohana	22		Coolie 800	Primi		34	
45	Sandha	23		Coolie 800			35	
46	Sudha	22		Driver 100	Primi		30	
47	Renukadev	22		Security	1200		34	
48	Deepa	24		Coolie 800	Primi		30	

49	Pinty	20	Coolie 700	Primi	33	
50	Bhavani	20	Coolie 800	Primi	35	34
51	Seetha	22	Coolie 800		35	
52	Varalakshn	24	Security 90	Primi	34	
53	Selvi	20	Coolie 800	Primi	34	34
54	Adisathi	22	Coolie 800		30	
55	Laxmi	30	Driver 100(	Primi	34	
56	Mariammal	25	Coolie 600		30	
57	Tamilselvi	26	Coolie 800		35	
58	Poongodi	21	Security 70	Primi	34	33
59	Shobhana	21	Coolie 700		32	
60	Maheswari	30	Coolie 600		34	
61	Ilayarani	24	Export 160	Primi	34	34
62	Pappathi	28	Coolie 800		34	
63	Parameswa	20	Coolie 700	Primi	36	
64	Jayalaxmi	22	Coolie 800	Primi	36	
65	Dilli	20	Coolie 800	Primi	32	31
66	Devi	21	Coolie 600	Primi		34
67	Komala	20	Coolie 700	Primi	34	
68	Hemamalir	30	Driver 100(	Primi	30	28
69	Nirmala	25	Coolie 800	Primi	36	36
70	Nagammal	20	Coolie 600		36	
71	Arockiyama	19	Coolie 800	Primi	30	
72	Amudha	20	Coolie 600	Primi	34	
73	Shakirabar	22	Export 1200		36	35
74	Banupriya	26	Coolie 600	Primi	34	
75	Sivagami	25	NGO 2100	Primi	36	36
76	Vinrasi	22	Coolie 900	Primi	36	35
77	Revathy	22	Coolie 600		36	36
78	Poongodi	24	Coolie 700	Primi	34	
79	Vatchala	23	Coolie 700	Primi	34	
80	Sivakumari	25	Driver 1900		36	
81	Pampa	22	Bus.2100		34	
82	Aruna	26	Coolie 800		34	
83		23	Coolie 700		36	
84	Jansirani	26	Coolie 800		33	
85	Vellathai	30	Coolie 600	Primi	28	
86	Sujatha	26	Driver 120(	Primi	32	
87	Yuvarani	24	Export 1600		33	
88	Chitra	22	Coolie 700	Primi	35	
89	Sudha	28	Coolie 600		32	
90	Radha	21	Coolie 600	Primi	33	
91	Megala	22	Coolie 800		34	
92	kamala	24	Coolie 700	Primi	36	36
93	Rathnakum	23	Driver 190(	Primi	36	
94	Mugayanes	26	Coolie 700	Primi	34	
95	Helanmary	20	Coolie 900		35	36
96	Sumithra	26	Coolie 700		36	
97	Bhuvanesv	22	Coolie 600	Primi	34	34
98	Gowri	22	Coolie 800		34	
99	Sundari	32	Coolie 600	Primi	34	

100	Fandhabar	21	Coolie 700	Primi	34	
101	Srilekha	21	Coolie 600		30	30
102	Yasodha	19	Coolie 800	Primi	34	34
103	Furidhabar	21	Coolie 600	Primi	34	
104	Sundari	32	Coolie 600	Primi	32	
105	Gowri	22	Coolie 800			34
106	Janaki	23	Bus.2000		34	
107	Vimala	18	Coolie 600	Primi	33	
108	Umadevi	19	Coolie 800	Primi	36	36
109	Kanchana	25	Coolie 700			34
110	Malar	20	Coolie 600	Primi	33	32
111	Lydra	18	Coolie 600	Primi	34	
112	Mahalaksh	17	Coolie 600	Primi	33	
113	Shanti	37	Coolie 900			34
114	Indumathi	20	Security 15	Primi	34	
115	Eswari	24	Driver 1000		30	30
116	Chandebuç	28	Coolie 800			35
117	Annaselvaı	22	Coolie 600		36	
118	Kalairani	19	Coolie 700	Primi	36	35
119	Kumari	22	Coolie 600			36
120	Indiraselva	22	Coolie 900		28	
121	Pappamu	25	Coolie 800		30	
122	Lavanya	20	Coolie 700	Primi		32
123	Valarmathy	22	Coolie 800	Primi		32
124	Punithama	22	Coolie 600	Primi	34	
125	Shakuntha	21	Coolie 900		34	
126	Bharani	19	Coolie 800	Primi	35	
127	Saraswathy	22	Coolie 800		34	33
128	Kamatchi	25	Coolie 700		31	
129	Jansirani	20	Coolie 600		32	
130	Jeeva	23	Driver 1600		32	33
131	Parithamar	28	Bus. 2500			33
132	Anjali	28	Driver 1200		34	33
133	subbu	28	Coolie 600			34
134	Jayanthi	25	Coolie 600		35	35
135	Glory	28	Driver 110(	Primi	35	34
136	Jayanthi	28	Coolie 600		34	
137	Rahmathu.	26	Coolie 800	Primi		28
138	Darling	24	Coolie 800	Primi	36	36
139	Premalatha	25	Coolie 800			33
140	Catherine	28	Coolie 800	Primi		35
141	Sumathivel	26	Security 1500		36	36
142	Anjali	24	Security 15	Primi	36	36
143	Sridevi	22	Coolie 170(	Primi		34
144	Alamelu	28	Coolie 800		34	33
145	vijaya	26	Coolie 800	Primi	34	34
146	Chitra	25	Security 15	Primi	36	35
147	Sathya	26	Coolie 700			36
148	Vimala	22	Coolie 700	Primi		34
149	Kalli srinivа	26	Coolie 700	Primi		34
150	Elizabethra	22	Security 1500		34	

151	Sudha sara	24	Driver 1500		34	
152	Rajarajesw	23	Coolie 800	Primi		34
153	Deepthi	25	Coolie 800			34
154	Dhanam	31	Coolie 800	Primi		30
155	Latha	22	Coolie 800		34	
156	Halhs	23	Coolie 900	Primi	34	
157	meenakshi	23	Cooli 800	Primi	34	34
158	kalaiselvi	21	Coolie 600	Primi	31	
159	Ramani	23	Coolie 800	Primi	32	30
160	Sudha	20	Collie 700	Primi	34	34
161	Prasanthi	20	PC 2700	Primi	36	35
162	Sasirekha	20	Hotel 2000		33	
163	Bagiyalaks	27	Bus. 3000		35	35
164	Parameswa	25	Coolie 800		35	35
165	Sundari	25	Coolie 600	Primi		34
166	Saraswathy	18	Coolie 800	Primi	33	
167	Malliga	32	Coolie 800	Primi	30	30
168	Vijayakuma	28	Coolie 800		35	
169	Meenakshi	20	Coolie 800	Primi		34
170	Kameleshw	18	Driver 200(	Primi	34	
171	Shoba	20	Coolie 600		36	
172	Suguna	25	Coolie 800		34	
173	Rukumani	24	Coolie 600	Primi		31
174	Janaki	20	Coolie 700		33	
175	Vasuki	30	Coolie 600		36	
176	Amalarpoo	22	Coolie 800	Primi	35	34
177	Reenamary	25	Coolie 600	Primi	33	
178	Janaki	20	Coolie 800		32	32
179	Jothy	19	Driver 200(	Primi	34	
180	Devi	24	Hotel 1500	Primi	34	
181	Vijayalaksh	25	Coolie 700	Primi	35	34
182	Selvi	25	Coolie 800		36	
183	Subathama	24	Coolie 600	Primi	34	
184	Violet	33	Coolie 800		34	33
185	Bharathy	24	Coolie 600	Primi	36	
186	Mary	19	Coolie 600	Primi	29	
187	Meenakshi	25	Coolie 800	Primi	28	
188	Saraswathy	18	Coolie 600	Primi	34	34
189	Ammu	23	Coolie 700	Primi	30	
190	Latha	25	Coolie 600		34	
191	Senthamils	30	Coolie 800		32	
192	Navas	22	Coolie 600		36	35
193	Chitra	19	Coolie 700	Primi	32	
194	Sumathy	21	Hotel 1500		36	36
195	Anitha	19	Coolie 100(	Primi	35	
196	Lakshmi	30	Driver 1500		33	
197	Beula	35	Coolie 800		35	36
198	Jayalakshn	30	Carpen.1600		35	34
199	Bhuvanesv	25	Driver 2000		33	
200	Dhatchaya	20	Coolie 100(	Primi	31	
201	Jayalakshn	21	Coolie 800		32	

202	Pappathy	21	Coolie 700		33	
203	Menaka	22	hotel 1500	Primi	34	34
204	lavanya	20	Security 16	Primi	35	
205	Madhuri	34	Coolie 120	Primi	35	35
206	Josephmar	23	Carpen.16(	Primi	28	
207	Rabiya	24	Electri2000		32	31
208	Varalakshn	25	Coolie 800		35	
209	Sangeetha	18	Coolie 600	Primi	34	
210	Sakthi	24	Coolie 700			36
211	Dillisan	20	Coolie 800	Primi	36	36
212	Kumari	23	Coolie 900	Primi	34	
213	Kalarani	20	Driver 1200		33	
214	Rajathi	21	Driver 1600		35	34
215	Mohanapriy	22	Bus.2000	Primi	32	
216	Latha	20	Export 180	Primi	34	
217	Saritha	19	Hotel 1700	Primi	33	
218	Amudha	21	Securi 180	Primi	35	34
219	Chitra	21	Elec 2200		30	
220	Selvi	21	Driver 1200		34	
221	Navaneeth	24	Driver 200(	Primi		35
222	Kalpana	28	PC 6700			36
223	Saritha gop	20	Busi3000	Primi	36	35
224	Kalpana	22	Coolie 800		33	
225	Rajeswari	23	Coolie 700	Primi	33	
226	Sunitha rar	22	Coolie 600	Primi	34	33
227	Bharathy	20	Coolie 800	Primi	27	
228	Mumtaz	18	Coolie 900	Primi	33	
229	Premalatha	24	Coolie 700		34	34
230	Jayalakshn	22	Coolie 800	Primi	36	36
231	Saibunisha	20	Coolie 600		33	
232	Deepa	21	Pvt co 280(	Primi	35	36
233	Shakirabar	22	Coolie 800	Primi	33	34
234	Sasikala	20	Coolie 600	Primi		34
235	Amirtham	22	Coolie 600			34
236	Mohana	24	Coolie 600	Primi	33	32
237	Gowri	26	Coolie 600		34	34
238	Shanti	25	Coolie 800	Primi	34	34
239	Priya	24	Coolie 600		28	
240	Ruby	26	Coolie 800		32	
241	Vetrichelvi	25	Coolie 800	Primi		34
242	Dhatchaya	24	Coolie 800			34
243	Jayanthi	26	Coolie 800	Primi	34	34
244	Poongodi	28	Coolie 800	Primi		32
245	Jaithoon	25	Coolie 800		35	35
246	Mythili	26	Coolie 800	Primi	36	
247	Seetha	24	Driver 1000		28	
248	Karthika	25	Coolie 600	Primi	36	
249	Sharmila	26	Coolie 600			36
250	Vimala	26	Coolie 800			36
251	Rajeswari	25	Coolie 600	Primi	35	34
252	nandhini	26	Coolie 800	Primi		36

253	Jayalakshn	25	Coolie 800		36	
254	Aruna	24	Coolie 800	Primi		35
255	Malliga	22	Coolie 800	Primi	32	
256	BhaVani	24	Coolie 800	Primi	36	
257	Christina	26	Coolie 600	Primi	32	
258	Radha	24	Coolie 800			33
259	Venkatarar	26	Coolie 600	Primi	36	36
260	Karpagam	22	Coolie 800	Primi		36
261	Mohanaval	24	Coolie 600	Primi	36	
262	Pushpagar	22	Pvt co 200(	Primi	36	
263	Sulochana	24	Securi 1000		36	
264	Pachiyaam	26	Coolie 800	Primi	30	
265	Malathy	25	Coolie 800	Primi		32
266	Malakshmi	26	Coolie 600	Primi	36	
267	Hithabegur	28	Coolie 800			34
268	Meenakshi	26	Hotel 1500	Primi	35	
269	Santhi	27	Coolie 800			36
270	Aisha	26	Coolie 800	Primi	34	
271	Bagiyalaks	25	Hotel 1600		36	36
272	Rajeswari	24	Coolie 600	Primi	32	
273	Jayalakshn	25	Hotel 1500	Primi	36	36
274	Kala	26	Coolie 700	Primi	30	
275	Ruth	26	Cooli 700		33	33
276	Gomathi	28	Cooli 700	Primi		34
277	Vigneshwa	26	Coolie 800		37	36
278	Vijayalaksh	25	Coolie 800			34
279	Patchiamm	24	Coolie 800	Primi		34
280	Kamatchi	26	Export 250	Primi		36
281	Ayesha	25	Pvt Co.300	Primi	36	36
282	Mekala	24	Hotel 2000	Primi	36	36
283	Ramadevi	23	Driver 1500		34	
284	Marystella	22	Coolie 700			30
285	Selvi	21	Coolie 800		36	
286	Jayanthi	20	Carpen 1200			36
287	Uma	24	Coolie 600	Primi	34	
288	Sangeetha	22	Coolie 700	Primi		34
289	Susleela	26	PC 6000			33
290	Meena	27	Driver 1200		36	
291	Poongodi	26	Hotel 1500	Primi	36	
292	Tharani	25	Driver 200(	Primi		36
293	Jayalakshn	24	Pvt Co 2500		33	
294	Dhanakala	26	Pvt Co 270	Primi		36
295	Jothilakshn	22	Export 3000			30
296	Deepa	24	Hotel 2000			30
297	Elizabeth	28	Coolie 800	Primi	36	36
298	Noorjahan	26	Coolie 700	Primi		33
299	Kamala	25	Coolie 600	Primi		34
300	Kumudha	26	PC 3200	Primi	36	36
301	Gowsar	19	Coolie 600	Primi	34	
302	Ettiammal	22	Coolie 800	Primi		36
303	Revathy	28	Coolie 700	Primi		34

304	Ranjitham	24	Driver 1500		35	36
305	Valarmathy	26	Driver 2000			35
306	Devi	22	Securi 250	Primi	35	
307	Rajeselvi	24	Coolie 700		35	34
308	Lakshmi	23	Coolie 800		36	35
309	Poonkodi	24	Coolie 600	Primi	34	32
310	Jannai	26	Driver 120	Primi	32	
311	Shrisha	24	Hotel 1600	Primi	34	
312	Latha	28	Carpent 17	Primi	34	
313	Deepa	26	Hotel 1500		36	36
314	Kanchana	27	Coolie 800	Primi		35
315	Sheela	28	Coolie 800	Primi	36	36
316	Kamatchi	24	Coolie 800			34
317	Renuka	26	Coolie 600	Primi		34
318	Dhanalaxm	22	Hotel 1600	Primi		34
319	Chitra	21	Coolie 600		34	
320	jayanthi	20	Drive 1500		34	
321	Amudha	28	Coolie 800		34	
322	Sivagami	20	Coolie 900		36	35
323	Usha	20	Coolie 800		35	34
324	Geetha	25	Driver 1600		34	34
325	Rajeswari	26	Secur 2000		34	
326	Kalaiselvi	27	Coolie 600		36	
327	Kumari	21	Bus. 2500		35	34
328	maheswari	20	Coolie 600	Primi	36	35
329	Sasikala	25	Coolie 800	Primi	35	
330	Kala	24	Hotel 1000			35
331	Lakshmi	23	Coolie 600	Primi		34
333	Jayanthi	28	Coolie 800	Primi	36	35
334	Nirmala	30	Coolie 600		32	
335	Malar	27	Coolie 800		36	34
336	Kalaiselvi	25	Coolie 800	Primi	35	34
337	Jessi	23	Coolie 600	Primi	33	32
338	Malliga	22	Coolie 800	Primi	35	35
339	Sumathy	23	Coolie 600		34	33
340	Devipriya	20	Coolie 700	Primi	35	35
341	Fathima	26	Coolie 800	Primi	36	35
342	Rathi	30	Coolie 600		34	34
343	Sudha	28	Coolie 800		30	28
344	Kavitha	23	Driver 1000		35	
345	Saraswathy	20	Coolie 600	Primi	33	32
346	manjula	28	Coolie 800		32	32
347	Sumalatha	29	Coolie 900		36	
348	Chitralaka	23	Securi 170	Primi	36	
349	Megala	24	Driver 100	Primi	36	36
350	Hemalatha	22	Coolie 800		35	34
351	Glory	20	Coolie 600	Primi		34
352	Rekha	18	Driver 1000		35	34
353	Deepa	23	Hotel 1600		36	35
354	Rajeswari	23	Coolie 800	Primi	36	35
355	Pushparan	26	Coolie 600	Primi	33	32

356	Kowsalya	22	Coolie 700	Primi	33	32
357	Soorya	20	Hotel 1700		34	33
358	Renukadev	24	Driver 150(	Primi	35	34
359	Indumathy	18	Hotel 1600	Primi	34	
360	Reetamary	25		Primi	36	35
361	Nithya	19		Primi	36	35
362	Mohana	23	Coolie 700		36	35
363	Kalaiselvi	25	Bus. 2500		30	28
364	Shenbagar	26	Coolie 700			32
365	Bharathi	20	Coolie 700		34	
366	Rajeswari	19	Coolie 600	Primi	35	35
367	Dhanalaksl	20	Coolie 800	Primi	36	36
368	jaya	24	Driver 160(	Primi	35	35
369	Suhasini	20		Primi	36	34
370	Amulu	30	Coolie 800			34
371	Vedavalli	26	Coolie 800			35
372	Devi	18	Coolie 600	Primi	32	31
373	Latha	25	Securi 180(	Primi	35	
374	Sajeeda	24	Coolie 700	Primi	36	
375	Rathna	26	Coolie 600	Primi	33	34
376	Vijayalaksh	18	Driver 200(	Primi	34	
377	Manonma	34			33	
378	Pencillamn	21	Coolie 800	Primi		34
379	Sudha	20	Coolie 600		33	32
380		21		Primi		35
381	Jayalakshn	20	Coolie 700		34	
382	Selvi	24	Coolie 800	Primi	34	
383	Amudha	23	Coolie 800	Primi	36	
384		20	Coolie 700	Primi	34	34
385		21	Coolie 600	Primi		34
386	Priya	25	Driver 150(	Primi		34
387		22			34	34
388	Lakshmi	21		Primi		35
389		24		Primi	35	
390		22			36	
391	Ammu	20	Coolie 800		36	
392	Priya	25	Coolie 600	Primi	35	35
393	Renukadev	24	Coolie 900	Primi	34	
394	Indumathy	18	Coolie 800	Primi	35	35
395	Mahalaksh	30	Driver 1500		36	
396		25	Driver 200(	Primi	35	36
397	Reetamary	28	Coolie 800		30	
398	Kalaiselvi	25	Coolie 600	Primi	34	
399	Rajeswari	19	Coolie 800	Primi		36
400		24	Coolie 600	Primi	36	36
401		30	Coolie 800		36	
402	Amulu	24		Primi	35	
403		20	Coolie 800	Primi	36	35
404	Vedavalli	24	Coolie 700		35	
405		24		Primi	35	36
406	Latha	25		Primi	35	

407		22			36	
408	Selvi	24		Primi	34	
409	Amudha	26	Coolie 700	Primi	35	35
410	Kanchana	22	Coolie 800	Primi	35	
411	maheswari	28	Coolie 700	Primi	34	
412	Priya	25	Coolie 800	Primi	34	34
413		20	Coolie 900	Primi	35	
414		23	Coolie 800		35	
415		20	Coolie 800	Primi	32	
416		26	Coolie 800		32	31
417		24			35	35
418	Eswari	31	Coolie 700		36	36
419	Sudha	24			36	
420	Malathy	27	Coolie 900		36	36
421	maheswari	24	Driver 150(	Primi	36	
422	Kanchana	25	Coolie 800		36	
423		22	Coolie 800		35	35
424	Sasikala	20	Coolie 600	Primi	34	
425		24	Coolie 800		35	
426	Nirmala	24	Coolie 800	Primi	35	35
427		27	Coolie 800	Primi	32	
428		24	Coolie 800		34	34
429		28	Coolie 600		34	
430		26	Coolie 700	Primi	34	34
431		23	Coolie 600		34	
432		30	Driver 150(	Primi	34	
433		18	Driver 150(	Primi	32	32
434		22	Coolie 800		33	
435	Dhanalaksl	19	Coolie 600		34	
436		23	Coolie 700		34	35
437	Kalaiselvi	19	Coolie 800		32	35
438		22	Coolie 700	Primi	36	35
439	Deepa	18	Driver 150(	Primi	36	
440	Selvi	35	Coolie 800		33	
441	Lakshmi	25	Coolie 800		36	36
442		23	Coolie 800	Primi	36	
443		30	Coolie 600		32	
444		24			35	35
445	Sumithra	20	Coolie 800	Primi	36	
446		35	Coolie 800		36	
447		25	Coolie 600		36	
448		25		Primi	36	
449		25	Coolie 800		36	
450		28	Coolie 900		34	
451	Kanchana	33	Coolie 600		33	
452		26	Coolie 800		30	
453	Varalakshn	27	Coolie 900		34	
454		21			35	
455		23	Coolie 900	Primi		35
456	Devi	18		Primi		34
457		20	Coolie 600	Primi	34	34

458	Mohanapriy	24		Primi	34	
459		20	Coolie 600	Primi	34	
460	Uma	26	Coolie 800	Primi	35	35
461		28	Coolie 800	Primi		32
462	Revathy	27	Coolie 600		34	34
463	Saraswathy	22	Coolie 800	Primi	35	35
464		21	Coolie 800		36	35
465	Deepa	22	Driver 1200		36	35
466		26		Primi	36	36
467	Kala	24		Primi	36	
468		19			35	34
469		28	Coolie 800	Primi	34	
470	Sharmila	24	Coolie 800	Primi	36	35
471		30	Coolie 900	Primi	30	
472	Jayalakshn	25	Coolie 900		34	35
473	Dhanalaksl	24	Coolie 800	Primi	36	
474		24	Coolie 900		34	
475		30	Coolie 800		30	
476		24	Coolie 900	Primi	32	
477	Sumathy	19	Coolie 800	Primi	34	35
478		27	Coolie 800		34	
479		25	Coolie 800		35	34
480		21	Driver 150(	Primi	34	
481	Revathy	30	Coolie 800		34	32
482	Tamilselvi	20	Coolie 900	Primi	32	34
483	jayanthi	37	Driver 1500		32	
484	Kamatchi	25	Driver 2000		30	30
485	Saraswathy	23	Coolie 800	Primi	34	
486		20	Coolie 800	Primi		32
487		22	Coolie 900	Primi	35	35
488	Varalakshn	24	Coolie 800	Primi	30	30
489		22	Driver 120(	Primi	36	36
490		25			36	36
491	Selvi	20	Coolie 900	Primi	34	
492		21	Coolie 800	Primi	36	35
493		24	Securi 1800		35	
494		31	Coolie 800	Primi	36	35
495		25	Coolie 600		34	
496		31	Driver 1200		36	36
497		21	Coolie 800	Primi	33	32
498	Poongodi	20	Driver 1500			34
499	Selvi	32	Coolie 800	Primi		35
500	Devi	24	Driver 160(	Primi		28
501	Bhavani	18		Primi	33	32
502	Dhanalaxm	26	Coolie 700		34	34
503		28			35	34
504		22	Coolie 600	Primi		35
505		20		Primi	34	
506		20	Coolie 900	Primi	36	35
507		21			33	34
508		25			36	36

509	manjula	22	Driver 120(	Primi		34
510		29	Coolie 900	Primi	35	34
511		22		Primi	36	
512	Deepa	22	Coolie 800	Primi		34
513		23	Coolie 800	Primi	36	36
514		24	Coolie 800	Primi		36
515		23	Coolie 800		30	
516		24	Coolie 800	Primi	34	
517	Karthika	26	Driver 1500		36	35
518		27			34	
519		28	Coolie 800		33	
520		23	Coolie 700		34	33
521	Chitra	24	Coolie 800	Primi	35	
522		25	Coolie 800		28	28
523	Geetha	21	Coolie 800		36	36
524		19	Coolie 800	Primi	36	36
525	Kamala	19	Coolie 800		36	35
526	Anandhi	22	Coolie 800	Primi	28	28
527	Amudha	21	Coolie 800	Primi	35	
528		24	Coolie 700	Primi	36	
529	Malar	30	Coolie 800		34	
530		22	Coolie 600		34	
531		21	Coolie 800	Primi	36	
532		31	Coolie 600	Primi	33	33
533	Sangeetha	20	Coolie 800	Primi	35	
534	Anitha	21	Coolie 600	Primi		36
535		27	Driver 1600		36	
536		29			34	
537	Eswari	24	Coolie 800		35	
538		28	Coolie 800	Primi	35	35
539	Selvi	20		Primi	34	
540		27	Coolie 800		36	36
541		21		Primi	34	
542	Dhanalaksl	21	Driver 200(	Primi	35	
543	Sumathy	30		Primi	36	35
544		29	Coolie 800		35	
545		20		Primi	34	
546		20	Coolie 800	Primi	35	35
547		27		Primi	35	
548	Sumathy	22	Driver 150(	Primi	34	34
549	Varalakshn	22			36	
550		22	Coolie 700		35	
551	Saraswathy	24		Primi	36	36
552	Ammu	21		Primi	35	
553	Rajeswari	20	Coolie 700		36	
554	Shanti	23	Coolie 600	Primi	35	35
555		24		Primi	35	
556	Priya	22	Coolie 700	Primi	35	35
557	Sathya	24			34	
558		22	Coolie 600		35	35
559		27		Primi	36	

560	Kalaivani	19		Primi	35	35
561		21	Driver 200(	Primi	34	
562		21			30	
563		25	Export 300	Primi	32	32
564	Kalpana	21			35	
565	Rajeswari	20		Primi	35	
566	Selvi	30	Coolie 700	Primi	35	35
567		30	Coolie 600		36	36
568		26	Driver 160(	Primi	35	
569	Anitha	21		Primi	34	34
570		23			36	36
571		20		Primi	33	33
572		20				35
573		22			36	
574	maheswari	24		Primi	30	30
575		24		Primi		34
576		20			35	35
577		33	Securi 2500		36	
578		29			30	
579		26			35	
580	Mahalaksh	22		Primi	32	32
581		25	Securi 250(	Primi	35	
582		26			35	34
583	Priya	24			35	
584	Gowri	19		Primi	34	
585		23		Primi	36	
586		20	Driver 200(	Primi	35	35
587	Sudha	26	Driver 200(	Primi	34	34
588	Mythili	23			36	
589		21			35	
590		19		Primi	36	35
591	maheswari	31			35	
592		30			28	
593	Kamatchi	28		Primi	32	
594		26			36	35
595		27			32	
596		21			32	32
597	Jayanthi	21		Primi	33	
598		21		Primi	36	36
599	Mohana	20		Primi	35	
600		27			35	35
601	Sharmila	25	Driver 2000		28	
602		27			34	34
603		21		Primi	35	
604		26		Primi	34	
605	Premalatha	25		Primi	32	32
606	Vimala	26	Driver 200(	Primi	30	
607		21		Primi	36	36
608	Usha	24		Primi	35	35
609	Kumari	26			34	
610	Sasikala	25			34	

611		22		Primi	32	32
612		26	Coolie 100	Primi	36	
613		25		Primi	36	36
614	Saritha	26		Primi	36	
615	Jayanthi	24	Driver 2000		32	
616		26	Coolie 800		34	
617	Sumathy	24		Primi	36	36
618	Anitha	26		Primi	35	
619	Rajeswari	30	Driver 2000		36	
620		24	Driver 2000		36	
621	Deepa	26		Primi	34	
622		24			32	32
623		28			35	
624	Fathima	29			32	
625	Aruna	26			35	
626		25	Driver 2000		34	34
627	Dhanalaksl	26			32	
628	Priya	24		Primi	36	
629		25			34	
630		26			33	
631		28		Primi	36	35
632		26		Primi	34	
633		27			32	
634	Fathima	26	Driver 150(	Primi	35	35
635		25	Driver 1500		36	
636	Vedavalli	21		Primi	34	
637		24			34	34
638		26		Primi	35	
639		25			32	
640		24		Primi	34	
641	Anandhi	26			32	32
642	Uma	25		Primi	35	35
643	Nirmala	26			34	
644	Mariammal	28			34	34
645		26	Coolie 800	Primi	34	
646		28			33	33
647	Alamelu	23		Primi	32	
648	Jeeva	26		Primi	33	32
649	Geetha	26	Coolie 800	Primi	32	28
650	Chitra	22	Coolie 800		28	
651	Indumathy	20			33	
652	Vetrichelvi	26		Primi	35	
653		22			32	
654		23	Coolie 800		32	32
655	maheswari	28		Primi	35	
656	Amulu	21	Coolie 600	Primi	36	
657		20	Driver 1600		36	
658	Muthu	26			35	
659	Poongodi	20		Primi	35	35
660		33		Primi	32	
661	Valli	22		Primi	33	33

662		22	Coolie 800	Primi	34	
663	Rabiya	32	Coolie 800		36	
664		25	Driver 160(	Primi	34	
665	Selvi	22	Driver 2000		36	
666	Rajathi	22	Coolie 800	Primi	32	
667	Sudha	19		Primi	35	35
668	Dhanalaksl	24		Primi	34	34
669	Sumathy	26			34	
670		23	Driver 150(	Primi	35	
671	Devi	24		Primi	35	
672	Sulochana	23		Primi	35	35
673	Sumathy	20		Primi	36	
674		22		Primi	34	
675		26			34	34
676		23		Primi	33	
677		30			34	
678	Malathy	22		Primi	34	
679		29			34	34
680	Revathy	29		Primi	32	
681		21		Primi	34	
682		26			35	
683	Eswari	23	Driver 2000		35	
684	Kamala	27			34	
685		32	Securi 1800		36	
686	Sudha	23	Driver 200(	Primi	28	28
687	Kala	25		Primi	36	
688		25			34	
689		26			34	
690		21	Driver 150(	Primi	34	
691	Dhanalaksl	22		Primi	36	
692	Kalaiselvi	27			33	33
693		20	Security 12	Primi	35	
694		30			34	34
695		20		Primi	34	34
696	Usha	19		Primi	35	
697	Pappathy	21		Primi	36	36
698	Sheela	32	Coolie 800		35	
699		23	Coolie 800		32	
700		22			34	
701	Kala	29			35	
702		23		Primi	36	35
703		25			35	36
704	Jayanthi	25	Driver 120(	Primi	36	35
705		24		Primi	35	34
706	Kalpana	24		Primi	34	
707	Anjali	23		Primi	36	28
708	Usha	28			28	
709	Varalakshn	24		Primi	35	
710	Tamilselvi	19		Primi	30	
711	Dhanalaksl	27			34	
712		24		Primi	35	

713	Radha	27			34	
714		26	Export 160	Primi	32	32
715		23			30	
716		21	Coolie 800	Primi	32	
717	Bhavani	20		Primi	36	36
718	Uma	27			36	36
719	Sumathy	25	Driver 1600		36	
720		23			34	
721		27			34	
722		20		Primi	34	
723		20		Primi	36	
724	Amudha	23		Primi	35	35
725		23			36	36
726		22	Coolie 700	Primi	35	
727		21	Driver 160(	Primi	32	
728		28		Primi	36	36
729	Priya	20		Primi	35	
730		25			36	36
731		26		Primi	35	
732		18		Primi	36	
733	Malar	24		Primi	34	34
734		24		Primi	36	36
735	Kalpana	21		Primi	34	
736		198		Primi	32	32
737	Revathy	24		Primi	30	
738		20		Primi	33	33
739	Megala	25			34	34
740		20		Primi	35	
741	Sumithra	19		Primi	36	
742	Elizabeth	28			34	34
743	Amulu	20		Primi	36	36
744		25		Primi	35	35
745		24		Primi	36	36
746		19	Coolie 800	Primi	35	
747	Mohana	22	Coolie 800	Primi	36	
748	Deepa	20	Coolie 800	Primi	34	34
749		26	Driver 1500		35	
750		20		Primi	34	
751		23			35	35
752		22		Primi	36	
753		25			34	
754	Priya	29			36	36
755		23		Primi	36	36
756		30		Primi	36	36
757		23		Primi	34	
758	Meena	29	Coolie 800		35	35
759		24	Coolie 800		35	
760		22	Coolie 800	Primi	32	32
761	Geetha	23			32	
762		23	Tailor 180(	Primi	32	32
763	Chandra	22	Coolie 800	Primi	30	30

764	Eswari	28			35	
765	Sudha	20		Primi	35	
766	Geetha	26		Primi	34	34
767	Meena	25			32	
768	Uma	28		Primi	34	34
769	Amudha	30			32	
770	Indumathy	21		Primi	34	
771	Shanti	27		Primi	36	
772	Rajeswari	20	Driver 150(	Primi	35	
773	Valarmathy	22			35	35
774		22			35	
775	Mahalaksh	22		Primi	35	35
776	Kalaivani	26		Primi	33	33
777		23			34	
778		21		Primi	32	
779	Elizabeth	20		Primi	34	34
780		20		Primi	35	34
781		24	Security 15	Primi	35	
782	Hemalatha	24		Primi	36	
783	Bhavani	20		Primi	36	35
784	Sumathy	19		Primi	36	
785	Vijayalaksh	20	Driver 2000			34
786		24	Driver 200(	Primi	32	
787		20		Primi	32	
788		26				34
789		24		Primi	31	31
790	Priya	20		Primi	34	
791	Sheela	22			32	32
792		30		Primi	32	
793	Selvi	26	Coolie 800	Primi	32	
794		28	Coolie 800	Primi	28	
795		24	Coolie 800		32	
796	Bhavani	27	Driver 800			30
797	Radha	19			34	
798		20		Primi	35	
799		25				30
800	Kalpana	21		Primi	36	
801	Megala	22				36
802		28		Primi	35	
803		18		Primi	34	
804	Usha	19			33	
805		23		Primi	34	
806		22		Primi	33	
807		19	Coolie 800	Primi	28	
808		25	Coolie 800	Primi	33	
809	Sujatha	30	Coolie 800		34	
810		26	Tailor 1800			35
811		27	Coolie 800		34	
812	Alamelu	27		Primi	34	
813	Saraswathy	27		Primi	34	
814	Usha	21	Coolie 800	Primi	34	36

815		20		Primi	34	
816	Sumathy	21		Primi	34	
817		20		Primi	32	36
818	Sujatha	25			33	36
819	Saraswathy	25		Primi	34	
820		22		Primi	35	35
821	Rajeswari	18		Primi	34	
822	Malathy	21			31	31
823	Valarmathy	22		Primi	30	
824	Renuka	26				33
825	Meena	26				32
826	Amulu	26		Primi	34	
827		26			34	36
828	Saraswathy	21		Primi	32	
829		29	Tailor 180(	Primi	33	
830		35	Tailor 1800		33	32
831		22	Driver 2000		34	
832		18	Coolie 800	Primi		34
833	Anandhi	24	Coolie 800	Primi	33	
834	Revathy	19		Primi	34	
835		21		Primi	32	35
836	Geetha	22	Driver 200(	Primi	33	
837		30			34	
838		26	Coolie 800	Primi	33	35
839		25	Coolie 800	Primi	32	
840	Lakshmi	27				30
841	Devi	23		Primi	32	32
842		18		Primi	34	
843		21		Primi	30	30
844		24		Primi		34
845		20		Primi	33	
846		20		Primi	34	
847		26		Primi	34	34
848	Ammu	23			33	
849		33				34
850	Indumathy	24	Driver 200(	Primi	34	
851	Varalakshn	21	Driver 200(	Primi	32	35
852	Radha	20		Primi	34	
853		24			33	36
854	Alamelu	22		Primi	31	
855		22	Coolie 800	Primi	32	32
856		27	Coolie 800		34	
857	Chitra	20	Driver 200(	Primi	30	30
858	Subitha	23	Driver 2000		35	
859	Saraswathy	23		Primi	34	34
860		27		Primi	34	34
861		20		Primi	33	35
862	Ramya	24		Primi	34	
863		18	Coolie 800	Primi	34	
864	Rajeswari	24	Coolie 700		34	35
865	Dhanalaxm	19	Driver 2000		35	35

866		24		Primi	33	36
867		22		Primi	34	36
868		20				34
869	Kalaivani	22	Driver 1500		33	
870	Anjali	22			33	
871	Dhanalaksl	28				33
872	Parvathy	19		Primi	34	
873	Kowsalya	19	Security 15	Primi	34	34
874		19	Coolie 800	Primi		34
875	Indumathy	24		Primi	32	
876		23			32	32
877	Geetha	20		Primi	32	
878	Valli	25		Primi	34	
879		19		Primi	34	34
880		28		Primi	34	34
881		23		Primi	34	34
882	Lakshmi	33			34	
883	Suguna	20	Driver 2000		34	34
884	Tamilselvi	20			33	
885	Loganayak	24			32	
886	Anandhi	30	Coolie 800	Primi	32	32
887	Nithya	23	Coolie 800		34	
888	Vijayalaksh	25	Coolie 700	Primi	34	34
889	Gowri	30	Driver 2000		34	34
890	Thabasunis	22		Primi	34	34
891	Regina	24			34	34
892	Renuka	25	Coolie 700		35	35
893		31			32	
894	Sudha	22		Primi	34	
895	Selvi	20	Driver 2000		32	
896		27		Primi	35	
897		19		Primi	34	
898		22			34	34
899	Devi	27			34	34
900		20		Primi	32	
901	Chitra	27			34	35
902	Banupriya	19		Primi	35	
903		22		Primi	34	
904	Sivagami	23			34	
905	Chitra	23			34	34
906	Rajeswari	18		Primi	34	34
907	Vijayalaksh	22		Primi	36	
908	Karpagam	20			31	
909		21			33	33
910	Kalaiselvi	25		Primi	34	34
911	Geetha	26		Primi	35	
912		36			32	32
913	Vijayalaksh	23			36	
914	Hema	26	Coolie 800	Primi	34	34
915	Anitha	21	Coolie 800	Primi	34	
916	Nirmala	28			35	35

917	Kamatchi	21		Primi	34	
918		26		Primi	33	33
919	Sudha	20	Driver 200(	Primi	34	
920		25		Primi	34	34
921		23			34	
922		25			32	
923	Jothilakshn	26	Coolie 800		34	
924		24		Primi	35	35
925		23		Primi	36	
226		24			28	28
927		21			32	32
928		19		Primi	34	
929		21		Primi	34	
930	Sundari	32	Coolie 800	Primi	34	34
931	Gowri	22			34	34
932		24		Primi	34	34
933	Vimala	26			34	
934	Umadevi	28	Driver 200(	Primi	34	34
935	Kanchana	26		Primi	33	
936	Malar	22			30	30
937		22	Coolie 800	Primi	34	
938	Mahalaksh	26		Primi	32	32
939	Anandhi	28			28	
940		26		Primi	32	
941		28		Primi	34	
942	Sudha	25			34	
943		22			30	30
944	Radha	26			34	
945		24		Primi	34	
946		22			34	34
947		22			34	
948		26		Primi	34	34
949		27			34	
950	Sivagami	24			34	34
951		22		Primi	36	
952	Kala	26		Primi	34	34
953	Kalaivani	28			34	
954	Jayanthi	22	Coolie 800		34	
955	Chitra	25	Coolie 800	Primi	36	
956		26			28	
957		24		Primi	34	34
958		26	Driver 200(	Primi	32	32
959		28	Export 180	Primi	34	34
960		26			34	
961	Jeeva	27		Primi	34	
962	Mumtaz	26			36	
963		22	Coolie 800		35	35
964	Getzy	26	Driver 200(	Primi	34	34
965	Malathy	27	Coolie 800	Primi	35	
966		26	Coolie 800	Primi	34	34
967	Selvi	23	Export 250	Primi	35	35

968	Malar	28			32	
969	Muthu	22	Export 250	Primi	33	
970		23			34	
971	Mohana	22		Primi	32	32
972		23	Coolie 800	Primi	34	
973	Renukadev	26	Coolie 800		24	
974	Deepa	24	Coolie 800	Primi	32	32
975		20	Coolie 800	Primi	26	26
976	Bhavani	20	Driver 200(	Primi	34	34
977	Bharathi	20			34	
978	Devi	21	Coolie 800	Primi	34	
979		20		Primi	34	
980	Devi	28	Coolie 800		34	
981	Kalpana	28			36	36
982	kamala	20	Coolie 800		34	34
983	Hemamalir	30	Coolie 800	Primi	34	
984	Nirmala	25		Primi	34	
985	Nagammal	20	Driver 200(	Primi	34	34
986		24			36	
987	Priya	19			34	36
988	Tamilselvi	26	Coolie 800	Primi	34	
989	Poongodi	21			34	34
990		23		Primi	35	
991		21			34	
992	Mahalaksh	30			34	
993		25		Primi	35	35
994		28		Primi	34	
995	Pappathi	24		Primi	34	34
996		25			32	
997	Jayalakshn	20		Primi	36	
998	Jayanthi	20	Coolie 800	Primi	34	34
999	Aruna	27			34	
1000		19		Primi	34	
1	Vijayalaksh	23		Primi	38	
2		32	Driver 2000		38	
3	Kamala	18		Primi	40	
4	Deepa	22			40	
5	Radha	20		Primi	40	
6	Selvi	25			39	
7	Anitha	28	Tailor 1800		40	
8	Sudha	28			39	
9		25		Primi	38	38
10		28		Primi	39	
11		23		Primi	39	39
12	Latha	28			39	
13	Bharani	19			40	40
14	Jayalakshn	21	Coolie 900		40	
15	Rajeswari	22	Coolie 900		40	
16	Ramya	26	Coolie 800		38	
17	Poongodi	28			40	

18		34	Coolie 800	Primi	40	40
19	Indiraselva	39	Driver 200(	Primi	39	39
20	Amulu	29			39	39
21		23		Primi	40	
22	Rajeswari	22		Primi	40	
23	Jayalakshn	23	Coolie 800		39	39
24	Sasikala	24			39	
25		26			39	
26	Rathna	28	Coolie 800	Primi	38	38
27	Kala	18	Coolie 700		39	38
28	Kumari	21	Coolie 600		40	39
29	Valli	20	Coolie 800	Primi	38	
30	Suguna	18	Tailor 180(	Primi	39	39
31	Uma	16			40	
32	Amudha	18			38	
33		24	Driver 200(	Primi	39	39
34	Indumathy	26			40	
35	Lakshmi	28		Primi	39	
36	Latha	26	Coolie 700	Primi	39	
37	Mohana	24			40	40
38	Deepa	28			39	
39	Seetha	22			40	
40		24		Primi	40	40
41	Bhavani	23			38	
42		24			39	
43	Usha	26			40	40
44		27			39	
45	Dhanalaksl	25		Primi	39	39
46		26	Coolie 800	Primi	39	
47	Devi	24	Coolie 800	Primi	38	
48		26	Tailor 1800		39	39
49	Parvathy	28	Driver 1600		40	
50	Kumari	21			40	
51	Lavanya	22		Primi	39	39
52	Sudha	26			38	
53	Kavitha	27	Driver 2000		39	
54	Rathna	25			40	40
55	Valli	28		Primi	40	
56		26		Primi	39	
57	Fathima	24		Primi	40	40
58		25		Primi	40	
59	Sheela	28	Cooli 800		40	
60	Ammu	26		Primi	39	
61		24			39	
62	Renuka	23			40	
63	Kowsalya	22			39	39
64		27	Coolie 800		38	
65	Janaki	21	Coolie 600		39	
66		29	Export 1800		40	40
67	Meenakshi	28	Driver 200(	Primi	39	
68	Selvi	26		Primi	38	

69	Chitra	27			38	38
70	Sumathy	28		Primi	39	
71		30		Primi	38	38
72		21	Coolie 700	Primi	38	
73	Alamelu	28		Primi	39	39
74	Geetha	29			40	40
75	Chitra	18			40	
76		22			40	
77	Poongodi	27			39	39
78		26	Tailor 1800	Primi	39	
79		25			39	
80	Revathy	24		Primi	39	39
81		23		Primi	38	
82	Eswari	25			39	
83	Kamala	24			39	39
84	Tamilselvi	22		Primi	40	
85		26	Driver 1500	Primi	40	
86	Valli	22	Coolie 800	Primi	38	38
87	Saraswathy	23	Driver 1600		39	
88	Varalakshn	24			40	40
89		25	Tailor 1200	Primi	40	
90		26			39	
91	Radha	27		Primi	39	
92		28			39	39
93	Kalpana	20			40	
94		21	Coolie 800		40	40
95	Kalaiselvi	22	Coolie 600	Primi	38	
96	Anitha	23	Security 16	Primi	38	
97		24	Coolie 800	Primi	39	39
98	Valarmathy	25	Tailor 1800	Primi	40	
99	Kalaivani	26			40	40
100		28			39	

Spont / IND	GBS	Mode of De	Wt	Apgar	Admit/No o	Neonatal C	PN Outcome
			2.18,1.83	7/10,8/10,6	38719		
			1.9	7/10,8/10	4		
			2.2	6/10,7/10	9		
			2.5	8/10,9/10			
			2.14	7/10,8/10	10		
			2.45	7/10,8/10			
			1.6	3/10,6/10	2		
	GBS		2.1	7/10,8/10	6		
			2.19	3/10,5/10	1		
			2.4	7/10,8/10	1		
			2.2,1.5	7/10,8/10,7	38786		
			2.2	8/10,9/10			
			1.5,2.2	5/10,7/10,7	38781		
			2.6	7/10,8/10	3		
			1.6	3/10,2/10,0/10			
			1.5	7/10,8/10	3		
			1.8	7/10,8/10	2		
			2	7/10,8/10	6		
			2.2	7/10,8/10	9		
			2.2	8/10,9/10			
			1	0/10,0/10	D/B		
			1.7	8/10,9/10	10		
			1.7	0/10,0/10	D/B		
			2	0/10,0/10	D/B		
			2.25	7/10,8/10			
			2.75	7/10,8/10			
			2.2	7/10,8/10			
	GBS		2	8/10,9/10			
			2.5	7/10,9/10			
			1.2	5/10,6/10	1		
			1.9	7/10,8/10	3		
			1.8,1.8	7/10,8/10-7	38937		
			2	7/10,9/10	4		
			2.2,1.7	7/10,8/10,7	38905		
			2.15	7/10,8/10	9		
			2.1	7/10,8/10	9		
			2.35	6/10,7/10	7		
			2	0/10,0/10	D/B		
			1.75	0/10,0/10	D/B		
			1.95,1.27	6/10,7/10-	38843		
			1.25	0/10,0/10	D/B		
			1.5	0/10,0/10	D/B		
			2.2	7/10,9/10			
			2	6/10,7/10			
	GBS		2.5	8/10,9/10			
			0.75	0/10,0/10	D/B		
			1.2	7/10,9/10			
			0.9	5/10,7/10	1		

	2.2	7/10/8/10			
	2.1	2/10,6/10,7			4
	2.25	7/10,8/10			
	1.75	0/10,0/10	D/B		
GBS	1.05	6/10,7/10			4
	1	0/10,0/10	D/B		
	2	7/10,8/10			
	1	0/10,0/10	D/B		
	2.1	0/10,0/10	D/B		
	2.15	8/10,9/10			3
	1.1	0/10,0/10	D/B		
	2.1	7/10,8/10			
GBS	1.9	7/10,8/10			6
	1.2	3/10,4/10			1
	2.3	6/10,8/10			2
	2.7	8/10,9/10			
	1.75	0/10,0/10	D/B		
	2.1	7/10,8/10			
	2.1	7/10,8/10			4
	1.2	3/10,7/10			3
	2.25	7/10,8/10			
	2.5	7/10,8/10			3
	1	0/10,0/10	D/B		
	2.37	6/10,7/10			6
	2.63	7/10,8/10			4
	2.1	7/10,8/10			2
	2.95	7/10,8/10			1
	2.3	8/10,9/10			2
	2.4	8/10,9/10			4
	1.6	6/10,7/10			8
	1.8	7/10,8/10			3
	2.5	7/10,9/10			
	2.4	7/10,8/10			7
	1.9	8/10,9/10			6
	2.3	6/10,7/10			
	2.13	5/10,7/10			4
	0.5	0/10,0/10	D/B		
	1	6/10,7/10			1
	1.29	7/10,8/10			8
	2.25	7/10,9/10			
	0.85,0.9	3/10,5/10-6		38719	
	1.52	6/10,7/10			7
	2.1	7/10,8/10			
	2.7	7/10,8/10			4
	2.25	7/10,8/10			
	1.99	6/10,7/10			6
	2.25	7/10,8/10			
	2.3	7/10,8/10			
	0.995,0.92	5/10,6/10-3		38719	
	1.5	2/10,3/10,3			1
	2	7/10,8/10			

		2	7/10,8/10			
		1.2	0/10,0/10	D/B		
		2	7/10,9/10			
		2	7/10,8/10			
		1.5	2/10,3/10,3/10			
		1.75	7/10,8/10		8	
		1.95	6/10,8/10		1	
		1.92	7/10,8/10		2	
		2.63	7/10,8/10		3	
		1.55	7/10,8/10		10	
		1.31,0.75	5/10,8/10-5		38964	
		2.05	7/10,8/10		6	
		1.52	6/10,8/10		7	
		2.12	7/10,9/10		2	
		2.04	8/10,9/10		4	
		1.15	5/10,6/10		4	
		2.25	7/10,8/10		8	
		2.25,2.08	7/10,9/10-6		38878	
		2.2	6/10,8/10		5	
		1.95	7/10,9/10		3	
		0.98	5/10,6/10		5	
GBS		1.96	7/10,8/10		4	
		1.7	7/10,8/10		6	
		1.7	7/10,8/10		5	
		2.1	7/10,8/10		6	
		2.2	7/10,9/10		6	
		2.2	7/10,8/10		4	
		1.9	2/10,4/10,6		10	
		0.8	6/10,7/10		2	
		1.6	3/10,6/10		3	
		1.2-1.2	6/10,7/10-6	5,6		
		1.8	4/10,6/10			
		1.7	6/10,7/10			
		2.09	7/10,8/10			
		2.2	6/10,7/10			
		1.7-2.02	0/10,0/10-7/10,8/10			
		2.1	8/10,9/10			
		0.75-1-0.9	5/10,6/10-5/10,6/10-3/10,5/10			
		3.41	7/10,8/10		3	
		1.79	7/10,8/10			
		2.2	7/10,8/10		1	
		2.36	7/10,8/10			
		2.45	7/10,8/10			
		2.2	7/10,8/10			
		2.4	7/10,8/10			
		2	7/10,8/10			
		2.26	7/10,8/10		4	
		3.42	5/1,6/10		1	
		1.9	5/10,6/10		4	
		2.02	7/10,8/10			
		2.38	6/10,7/10			

	2.54	7/10,8/10		
	1.9	6/10,7/10		5
	1.5	5/10,6/10		17
	1.4	5/10,6/10		8
	1.9	7/10,9/10		4
	2	6/10,8/10		
GBS	2	8/10,9/10		5
	1.2	5/10,7/10		3
1.6-1.2		7/10,8/10		
	2.2			9
	2.25	3/10,5/10,8		3
	1.7	6/10,7/10		7
	2.25	7/10,8/10		
	2.15	6/10,7/10		3
1.9-2		8/10,9/10-8/10,9/10		
	1.25	6/10,8/10		6
	1.5	7/10,8/10		4
	2.25	5/10,5/10,7		9
	2	7/10,8/10		3
	2.25	4/10,6/10		2
	2.3	7/10,8/10		6
	2	7/10,8/10		7
	1	4/10,5/10		1
	1.9	4/10,6/10		4
	2.4	7/10,8/10		
1.75-1.7		7/10,8/10-4/10,6/10		
	2.5	7/10,8/10		
	1.9	4/10,6/10		5
	2.5	5/10,7/10		
	2	5/10,8/10		
	2.5	7/10,8/10		
	2.25	7/10,8/10		3
	2.4	7/10,8/10		
2.2-2.1		6/10,8/10-6/10,8/10		
	2.4	7/10,8/10		
	0.9	2/10,2/10		2
	0.75	D/B	D/B	
	2.2	1/10,6/10,7		11
	1.5	0/10,0/10	D/B	
	2.1	6/10,8/10		
	1.5	7/10,8/10		4
	3.05	4/10,6/10		
	1.6	2/10,8/10		12
	2.5	2/10,5/10,7		7
	2.4	7/10,8/10		3
	1	5/10,7/10		3
	4.25	7/10,8/10		2
	2.5	3/10,5/10,8/10		
	1.6	3/10,8/10		4
	1.6	2/10,7/10		12
	1.6	D/B	D/B	

	1.75	7/10,8/10		9
	2.1	7/10,8/10		
	2.25	7/10,8/10		
	2.4	3/10,5/10,7		5
	0.75	D/B	D/B	
	1.75	7/10,8/10		10
	2.75	D/B	D/B	
	1.6	6/10,7/10		8
	2.15	8/10,9/10		
	2.95	8/10,7/10		
	2	4/10,7/10		4
	2	7/10,8/10		
	2.5	7/10,8/10		
	1.5	7/10,8/10		8
	2.2	7/10,8/10		
	1.5-1.5	6/10,8/10-6/10,8/10		
	2.25	8/10,9/10		
	1.25	6/10,7/10		4
GBS	1.9	4/10,5/10		2
	2.55	7/10,8/10		
	2.5	7/10,8/10		7
	2.25	7/10,8/10		6
	1.75	7/10,8/10		4
	1.1	2/10,6/10		7
	2.1	7/10,8/10		4
	0.7	D/B	D/B	
	1.2	5/10,6/10		14
GBS	2.1	7/10,8/10		3
	2.1	7/10,8/10		3
	0.9-1.5	5/10,6/10-6/10,7/10		
	2.7	6/10,7/10		4
	1.5	5/10,7/10		2
	1.5	7/10,8/10		8
	2.01	7/10,8/10		15
	2.22	6/10,7/10		7
	1.7	6/10,7/10		4
	2.53	7/10,8/10		1
	0.8	5/10,6/10		1
	1.7	7/10,8/10		7
	1.76	7/10,8/10		7
	2.15	7/10,8/10		4
	1.9	5/10,6/10		5
	1.38	5/10,6/10		10
	2.18	6/10,7/10		6
	2.39	7/10,8/10		3
	0.86	5/10,6/10		4
	2.86	7/10,8/10		12
	2.34	7/10,8/10		7
	2.54	7/10,8/10		6
	1.35-1.5	7/10,8/10-7/10,8/10		
	2.4	7/10,8/10		14

	2.63	7/10,8/10	6
	2.11	7/10,8/10	10
	1.62	7/10,8/10	6
	2.33	7/10,8/10	9
	1.47	6/10,7/10	7
	1.5	6/10,7/10	9
	3	7/10,8/10	4
	3.1	7/10,8/10	9
	2.03-1.52	6/10,8/10-5/10,6/10	
	2.3	7/10,8/10	6
	2.81	6/10,7/10	10
	1.37	6/10,7/10	4
	1.77	7/10,8/10	12
	3.4	7/10,8/10	9
	2.05	6/10,7/10	6
	2.2	5/10,6/10	10
	1.8-1.59	6/10,7/10-7/10,8/10	
	1.89	7/10,8/10	2
	1.66	6/10,7/10	8
	1.19	6/10,7/10	4
	3.6	7/10,8/10	4
	1.08	6/10,7/10	2
GBS	1.7	6/10,7/10	13
	2.06	7/10,8/10	3
	2.62	5/10,6/10	4
	2.25	3/10,5/10	5
GBS	2.22	7/10,8/10	1
	3.8	5/10,6/10	3
	3.01	7/10,8/10	1
	1.9-2.2	7/10,8/10-6/10,7/10	
	1.5	7/10,8/10	8
	0.89	5/10,6/10	3
	2.21	6/10,7/10	8
	2.25	7/10,8/10	7
	0.9	5/10,6/10	1
	1.9	6/10,7/10	7
	1.6	7/10,8/10	24
	2.48	7/10,8/10	14
	2.4	6/10,7/10	4
	2.6	7/10,8/10	7
	1.7	7/10,8/10	7
	2.5	6/10,7/10	4
	1.16	5/10,6/10	1
	0.8	5/10,6/10	1
	2.41	7/10,8/10	7
	1.87	6/10,7/10	8
	2.01	6/10,7/10	28
	2.13	7/10,8/10	3
	1.69	5/10,6/10	2
	1.89-1.86	6/10,7/10-7	38937
	1.97	6/10,7/10	4

	1.92	7/10,8/10	7
	2.3	7/10,8/10	4
	2.03	7/10,8/10	8
1.65-1.2		6/10,7/10-6	38842
	2.16	5/10,6/10	5
1.48-1.39		6/10,7/10-6	38931
	1.3	5/10,6/10	7
	2	7/10,8/10	4
	2.1	7/10,8/10	3
	2.3	7/10,8/10	17
	2.6	6/10,8/10	15
2.08-2.04			38811
	2.1	5/10,6/10	
	1.3	6/10,7/10	1
	2.05	6/10,7/10	5
	1.4	6/10,7/10	12
	1.37	5/10,6/10	4
	2.18	7/10,8/10	12
	2.5	7/10,8/10	
2.2-2		7/10,9/10-7/10,9/10	
	2.5	7/10,9/10	
	1.5	6/10,7/10	14
	2.5	8/10,9/10	
	2.1	7/10,8/10	
	2.6	7/10,8/10	
	2.2	7/10,8/10	
	2.4	7/10,8/10	
	2.4	7/10,8/10	
	2.2	5/10,9/10	
	1.2	5/10,6/10	1
1.9-2		2/10,5/10-2/10,5/10	
	2.5	7/10,8/10	1
	1.8	7/10,8/10	5
	2.3	7/10,8/10	
2-2.25		6/10,8/10-8	16
	2.1	7/10,8/10	
	2.65	7/10,9/10	
	2	7/10,9/10	
	1.5	D/B	D/B
	2.3	7/10,8/10	
	2.55	7/10,8/10	
	1.4	7/10,9/10	8
	3	8/10,9/10	4
	2.4	7/10,8/10	
	3.04	7/10,8/10	13
	2.45	7/10,8/10	
	2	6/10,7/10	12
	2.1	7/10,8/10	
	2.3	7/10,8/10	
	2.5	7/10,8/10	
	1.4	2/10,4/10	7

1.6	5/10,7/10		12
1.75	7/10,8/10		7
2.25	6/10,7/10		7
2	7/10,8/10		7
2.25	7/10,8/10		
2.5	7/10,9/10		
2.5	7/10,8/10		
0.9	5/10,7/10		5
1.5			6
2	8/10,9/10		
2.3	7/10,8/10		
2.75	7/10,8/10		
2.2	7/10,8/10		
2.25	D/B	D/B	
2.25	7/10,8/10		
2.3	7/10,8/10		
1.2			10
2.45	7/10,8/10		
2.6	8/10,9/10		
1.8	7/10,8/10		4
1.75	5/10,6/10		6
1.6	6/10,7/10		10
1.6	7/10,8/10		5
1.3	6/10,7/10		1
2.25	7/10,8/10		
2	7/10,8/10		
2.25	7/10,8/10		
2.3	7/10,8/10		
2.1	7/10,8/10		
2.1	7/10,8/10		
2	2/10,6/10,7		4
1.75	6/10,8/10		4
2.2	6/10,8/10		12
2.25			6
2.3	7/10,8/10		
2.4	8/10,9/10		9
2.25	6/10,7/10		
2	8/10,9/10		
2	7/10,8/10		
2.2	6/10,7/10		
2.5	7/10,8/10		
0.9	5/10,7/10		4
2	8/10,9/10		2
2.3	7/10,8/10		
2.2	7/10,8/10		
2.25	7/10,8/10		
2.2	7/10,8/10		
2.25	0/10,0/10	D/B	
2.3	7/10,8/10		
2.5	7/10,8/10		
2.45	7/10,8/10		

2.5	7/10,8/10		2
2	2/10,8/10		
2.25	2/10,8/10		
2.3	7/10,8/10		
2.1	7/10,8/10		
2	2/10,6/10,7		2
2.3	7/10,8/10		
2.4	7/10,8/10		
1.75	0/10,0/10	D/B	
2.35	7/10,8/10		
2.3	6/10,8/10		5
2.3	7/10,8/10		
2.25	7/10,8/10		
2.5	6/10,8/10		
2.7	2/10,8/10		
1.9			13
1.8	0/10,0/10	D/B	
2.25	8/10,9/10		8
2.1	8/10,9/10		3
1.5	2/10,5/10,7		13
1.4			9
2	6/10,8/10		9
2.3	5/10,7/10		3
2.5	7/10,8/10		
2	7/10,8/10		6
1.1	0/10,0/10	D/B	
1.9	6/10,8/10		2
1.1	6/10,8/10		3
2	7/10,8/10		
1.5			3
2.4	7/10,9/10		
2.5	7/10,8/10		
1.9	7/10,8/10		6
2.25	8/10,9/10		9
2.25	5/10,8/10		
1.5	0/10,0/10	D/B	
2.3	7/10,8/10		
2.5	7/10,8/10		
2.6	5/10,8/10		2
2.5	8/10,9/10		
2.5	7/10,8/10		
2.4			
2.25	8/10,9/10		
1.5	0/10,0/10	D/B	
3.7	8/10,9/10		11
1.9	3/10,5/10		17
2.25	7/10,8/10		
2.2			
1.9	7/10,9/10		9
1.7	7/10,8/10		11

2	5/10,6/10		
2.3	7/10,8/10		
2.3	6/10,7/10		
1.1	0/10,0/10	D/B	
2.3	7/10,8/10		
2.2	8/10,9/10		
2.5	8/10,9/10		
2.4			
2.5	7/10,8/10		
	5/10,6/10-6/10,7/10		
2.4	7/10,8/10		
2.8	7/10,8/10		
0.5	D/B	D/B	
2.2	6/10,7/10		5
2.2	D/B	D/B	
1	D/B	D/B	
1.75	D/B	D/B	
2.1	6/10,7/10		
2.6	8/10,9/10		
1.5	6/10,7/10		9
2.25	7/10,8/10		
2.4	7/10,8/10		
1.1	D/B		
2.5	7/10,8/10		14
1.5	6/10,7/10		17
1.2			7
2.5	5/10,6/10		10
1.2	D/B	D/B	
3.49	5/10,8/10		12
2.5	8/10,9/10		
2.2	3/10,5/10,7		4
2.3	7/10,8/10		
2.4	7/10,9/10		
2.25	7/10,9/10		
2	8/10,9/10		6
2.2	7/10,8/10		
2.2	7/10,8/10		7
0.5	2/10,4/10		1
1.35			7
1.8	6/10,7/10		7
2.3			
2.2	7/10,8/10		
2	7/10,9/10		
2.5	8/10,9/10		
1.85	7/10,8/10		4
2.4	7/10,8/10		

2.2	7/10,8/10		1
2.2	7/10,8/10		
2.5	7/10,8/10		
2.2	7/10,8/10		
2.25	7/10,9/10		3
2.25	7/10,8/10		6
1.3	0/10,0/10	D/B	
2	8/10,9/10		5
2.4	8/10,9/10		
1.9	7/10,9/10		9
1.8	7/10,8/10		6
1.9	6/10,7/10		7
2.3	6/10,8/10		
0.75	0/10,0/10	D/B	
2.6	7/10,8/10		
2.6	7/10,8/10		
2.5	6/10,7/10		5
2.25	7/10,9/10		
2.6	7/10,9/10		
2.25	7/10,8/10		
2	7/10,8/10		
2.4	7/10,8/10		
1.8	7/10,8/10		4
2.3	7/10,9/10		
2.6	8/10,9/10		
2.2	8/10,9/10		
1.5			9
2.3	7/10,9/10		
2	7/10,8/10		5
2.6	7/10,8/10		
2	7/10,8/10		5
2.2	7/10,8/10		
2.6	7/10,8/10		
2.4	7/10,8/10		
2.5	D/B	D/B	
2.25	6/10,7/10		
2.35	6/10,7/10		
2.25	7/10,8/10		
2.15	8/10,9/10		4
	7/10,8/10-7/10,8/10		
2.5	8/10,9/10		
2.4	7/10,8/10		
2.5	7/10,8/10		
2.2	7/10,8/10		
2.25	7/10,9/10		
2.25	8/10,9/10		
2	8/10,9/10		
2.4	7/10,9/10		
2.5	6/10,8/10		

2.4	7/10,8/10		
2.25	7/10,8/10		
1	D/B	D/B	
1.55	2/10,8/10		3
2.3	7/10,8/10		
2.4	8/10,9/10		
2.4	7/10,8/10		4
2.3	7/10,8/10		
2.1			5
2.7	7/10,8/10		
1.25	6/10,7/10		8
2.3	7/10,8/10		
2.25	7/10,8/10		
1.75	7/10,8/10		2
2.4	7/10,9/10		
2.6	7/10,8/10		
1.1	2/10,4/10,6		9
2.5	7/10,8/10		
1.7	2/10,7/10		1
2.1	7/10,9/10		
2.2	5/10,9/10		6
2.4	6/10,7/10		12
2	7/10,8/10		
2.5	8/10,9/10		
2.25	7/10,8/10		4
1.75	6/10,7/10		7
2.3	7/10,8/10		
2.15	8/10,9/10		
2	0/10,0/10	D/B	
2.25	8/10,9/10		
0.75	5/10,7/10		14
1.45	6/10,7/10		1
2.4	7/10,8/10		
1.4	0/10,0/10	D/B	
1.9	0/10,0/10	D/B	
1	5/10,7/10		16
2.3	7/10,8/10		
2.2	5/10,7/10		
2.55	3/10,5/10		4
1	2/10,4/10,6		1
2	7/10,9/10		
2.25	7/10,8/10		
1.7	7/10,8/10		5
	5/10,6/10		
0.85	6/10,7/10		22
2.5	7/10,8/10		
	7/10,8/10-7/10,8/10		
2	7/10,8/10		5
2.1	5/10,6/10		8

	7/10,8/10-7/10,8/10	
2.6	7/10,8/10	10
2.3	6/10,7/10	10
2.2	7/10,8/10	5
1.2	5/10,6/10	12
1.85	6/10,7/10	3
2.32	7/10,8/10	11
2.25	5/10,6/10	2
2.2		6
2.4	6/10,7/10	15
1.65	5/10,6/10	4
1.4	6/10,7/10	11
2.55	5/10,6/10	2
1.6	6/10,7/10	2
2.7	7/10,8/10	4
1.75	7/10,8/10	4
1.26	5/10,6/10	2
2.1	7/10,8/10	5
1.9	7/10,8/10	5
1.5	6/10,7/10	10
3.1	6/10,7/10	4
1.8	5/10,6/10	6
1.2	4/10,5/10	12
2.2	7/10,8/10	5
2.3	6/10,7/10	4
1.5	6/10,7/10	5
1.9	6/10,7/10	6
	6/10,7/10-6/10,7/10	
1.3	5/10,6/10	9
1.6	6/10,7/10	12
	5/10,6/10-6/10,7/10	
1.39	6/10,7/10	3
2.2	7/10,8/10	14
1.8	6/10,7/10	14
	6/10,7/10-7/10,8/10	
1.5	0/10,0/10	D/B
1.5	0/10,0/10	D/B
1.4	0/10,0/10	D/B
	2/10,4/10	14
1.7	7/10,8/10	3
2.25	7/10,8/10	8
1.8	7/10,8/10	6
1.5	4/10,7/10	8
2.2	7/10,8/10	
2.3	5/10,6/10	4
2.25	7/10,8/10	
2.25	3/10,5/10,7	1
2.2	8/10,9/10	
1.2	5/10,7/10	10
1.2		10

2	7/10,8/10		
2.3	7/10,8/10		
1.9	4/10,6/10		12
2.4	8/10,9/10		
2.25	6/10,8/10		
2	8/10,9/10		11
2.75	5/10,6/10		10
2.5	6/10,7/10		4
	7/10,8/10-6/10,7/10		
2.3	7/10,8/10		
2.25	7/10,8/10		
2.2	0/10,0/10	D/B	
1.75	7/10,8/10		8
2	8/10,9/10		
1.75			3
1.9			6
2.75	7/10,8/10		8
2.35	7/10,8/10		
2	6/10,7/10		6
	0/10,0/10	D/B	
2.5	7/10,8/10		
2	6/10,7/10		
1.9	6/10,7/10		6
2	7/10,8/10		
2.4	7/10,8/10		
	7/10,8/10-7/10,8/10		
2.25	7/10,8/10		
2.25	7/10,8/10		
2.2	7/10,8/10		
2.25	7/10,9/10		
	7/10,9/10-6		-8
	0/10,0/10	D/B	
3.1	7/10,8/10		5
2.25	8/10,9/10		
2.25	7/10,8/10		
2.25	7/10,8/10		
2.4	7/10,8/10		12
2.25	7/10,8/10		
2.25	7/10,8/10		
2.25	8/10,9/10		
1	6/10,7/10		15
2.25	7/10,9/10		
	0/10,0/10		
1.5	7/10,9/10		14
2.2	8/10,9/10		8

1.2	7/10,8/10		14
1	6/10,7/10		1
1.95	7/10,8/10		7
2.5	8/10,9/10		
2.4	8/10,9/10		
2.6	7/10,9/10		
2.2	7/10,9/10		
1.8	7/10,9/10		6
2	7/10,8/10		
2.6	7/10,8/10		
2.5	4/10,7/10		4
2.5	8/10,9/10		
1.6			7
2.5	7/10,8/10		7
2.25	8/10,9/10		
2.3	7/10,8/10		
2.2	4/10,6/10		2
2.25	7/10,8/10		
2.7	6/10,8/10		
2.4	7/10,9/10		
2	7/10,8/10		4
1.25	2/10,4/10,6		8
1	0/10,0/10	D/B	
2.25	8/10,9/10		
2	7/10,8/10		
2	7/10,9/10		
2.4	7/10,9/10		
2			4
2.4	7/10,8/10		
2.25	7/10,8/10		
2.4	7/10,8/10		
2.1	7/10,8/10		
2.4	8/10,9/10		
2	7/10,9/10		
2.25	7/10,8/10		
1.5			9
2.25	7/10,8/10		
2.5	6/10,8/10		
	0/10,0/10	D/B	
2.2	7/10,8/10		
2.3	7/10,9/10		
2	7/10,8/10		14
2.25	7/10,8/10		
2.2	0/10,0/10	D/B	
1.4	5/10,7/10		9
1.75	6/10,7/10		10
800	3/10,5/10		2

2.25	7/10,8/10		
2.4	5/10,8/10		
1.6	7/10,8/10		4
2.43	7/10,8/10		13
1.25	7/10,8/10		7
2	8/10,9/10		4
2.75	8/10,9/10		
2.1	8/10,9/10		
2.25	7/10,8/10		
2.25	8/10,9/10		
			-8
1.5	5/10,6/10		5
2	7/10,8/10		7
1.25	5/10,6/10		12
2	6/10,7/10		
2.3	7/10,8/10		
2.6			11
2.25			
2.3			
2.5			4
2.3		D/B	
2.1			
1.6	6/10,7/10		6
2.1	7/10,8/10		
2.25	7/10,8/10		
1.75	0/10,0/10	D/B	
1.75	7/10,8/10		6
1.585	7/10,8/10		9
1	6/10,7/10		4
1.23	7/10,8/10		14
	8/10,9/10	-8/10,9/10	
2.25	7/10,8/10		4
1	0/10,0/10	D/B	
2.4	8/10,9/10		
2.5	8/10,9/10		
2.4	0/10,0/10	D/B	
2.25	7/10,8/10		
2.1	7/10,8/10		5
2.1	7/10,8/10		
2.25	7/10,8/10		
	0/10,0/10	D/B	
2.5	8/10,9/10		
2.6	8/10,9/10		
	7/10,8/10		
	0/10,0/10		
2.2	7/10,8/10		
1.9	6/10,7/10		3
2.25	7/10,8/10		

2	0/10,0/10	D/B	
2.7	7/10,8/10		
2.4	8/10,9/10		
2	7/10,8/10		3
	7/10,9/10-7/10,9/10		
1.6	5/10,6/10		3
1	0/10,0/10	D/B	
2.05	8/10,9/10		
2.4	7/10,8/10		
	7/10,8/10-6/10,7/10		
2.75	8/10,9/10		
2.2	7/10,8/10		3
2.2	8/10,9/10		
1.5			8
1.25	3/10,5/10		1
2	6/10,7/10		
2.2	5/10,7/10		
2.1	7/10,8/10		
2.5	6/10,8/10		
2.5	7/10,8/10		
2.1	7/10,8/10		
2.3	6/10,7/10		
2.2	7/10,8/10		
1	0/10,0/10	D/B	
	6/10,7/10-6/10,7/10		
2.2			
1.1	0/10,0/10	D/B	
2.4	6/10,7/10		6
2.25	8/10,9/10		
2	8/10,9/10		
2.6	7/10,8/10		6
2.25	7/10,8/10		
2.05	5/10,7/10		6
2.25	7/10,9/10		
2.4	8/10,9/10		
1.75	3/10,7/10		1
2.45			5
2.25	8/10,9/10		
1.75	0/10,0/10	D/B	
2	7/10,8/10		
1.25	0/10,0/10	D/B	
2.25	7/10,8/10		
2.4	7/10,9/10		
2.4	7/10,8/10		
2.45	7/10,8/10		
1.9	7/10,8/10		4
2.5	8/10,9/10		
2.2	6/10,7/10		9

2.5	8/10,9/10		
2.7	7/10,8/10		
2	0/10,0/10	D/B	
2.5	7/10,8/10		
2.1	6/10,7/10		10
1.6	3/10,7/10		2
2	7/10,8/10		6
	7/10,8/10-7		-7
2.25	7/10,8/10		
2.19	5/10,6/10		1
1.3	8/10,9/10		12
1.6	0/10,0/10	D/B	
2.2	8/10,9/10		
2.25	7/10,8/10		
2.25	8/10,9/10		
2.15	7/10,8/10		
2.4	6/10,7/10		1
2.25	7/10,8/10		
1.6	3/10,2/10,0	D/B	
1.5			3
1.85			2
2	7/10,8/10		
2	0/10,0/10	D/B	
2	7/10,8/10		6
2.27	5/10,6/10		9
2.23	8/10,9/10		
1	0/10,0/10	D/B	
2.25	7/10,8/10		
1.4	7/10,8/10		9
2.5	7/10,8/10		
1.7	8/10,9/10		10
2	7/10,9/10		
2.75	7/10,8/10		
1.7	0/10,0/10	D/B	
2.5	8/10,9/10		
2.25	7/10,8/10		
2	8/10,9/10		
2.4	7/10,8/10		
	7/10,8/10-7/10,8/10		
2.25	7/10,8/10		
2.5	7/10,9/10		
1.2			1
1.9	6/10,7/10		3
1.8	7/10,8/10		8
2.3	6/10,7/10		
1.1	3/10,7/10		12
2	7/10,9/10		4
	7/10,8/10-7/10,8/10		
1.7	0/10,0/10	D/B	
2.15	7/10,8/10		9

2	7/10,8/10		
1.5	5/10,7/10		8
1.5	7/10,8/10		12
1.85	5/10,6/10		6
2.3			3
1		D/B	
2.1	7/10,8/10		9
	7/10,8/10-7/10,8/10		
2.25	7/10,8/10		
	3/10,5/10		4
1.2	0/10,0/10	D/B	
2	7/10,8/10		
2	7/10,8/10		
1.75	6/10,7/10		12
1.5			2
1.95			1
1.9	7/10,8/10		2
2.6			3
1.55	7/10,8/10		10
	7/10,8/10		4
2.05	7/10,8/10		6
1.52	6/10,7/10		7
960	3/10,5/10		6
1.37			5
1.88	5/10,6/10		7
1.45	6/10,7/10		12
2.2	7/10,8/10		3
2.3	6/10,7/10		3
2.3	6/10,7/10		6
2.1	7/10,8/10		4
2	5/10,6/10		4
2	5/10,6/10		4
2.6	7/10,8/10		2
2.4	6/10,7/10		4
2.7	6/10,7/10		5
2	7/10,8/10		4
2	7/10,8/10		6
1.8	6/10,7/10		5
2.8	7/10,8/10		
995	5/10,7/10		2
1.97	5/10,6/10		5
1.8	6/10,7/10		5
1.4	7/10,8/10		5
1.3	7/10,8/10		12
1.9	7/10,8/10		3
2.85	7/10,8/10		4
2.1	6/10,7/10		4
2.3	7/10,8/10		7
2.05	0/10,0/10	D/B	
1.75	0/10,0/10	D/B	

	1.25	0/10,0/10	D/B	
	1.5	0/10,0/10	D/B	
	2.2	7/10,8/10		
	1.7	5/10,7/10		7
	2	6/10,7/10		4
	0.75	0/10,0/10	D/B	
	1.2	5/10,6/10		12
	0.9	5/10,7/10		1
	2.2	7/10,8/10		
	2.1	2/10,6/10,7		4
	2.1	7/10,8/10		
	1.85	4/10,6/10		4
	2.25	7/10,8/10		
	2.75	8/10,9/10		5
	2.1	7/10,8/10		4
	1.2	3/10,7/10		14
	2.25	7/10,8/10		
	2.5	7/10,8/10		3
	2.25	5/10,9/10		4
	2.35	5/10,8/10		
	2.1	0/10,0/10	D/B	
	2.1	8/10,9/10		3
	2.4	7/10,8/10		
	1.1	0/10,0/10	D/B	
	2.1	7/10,8/10		
	2.1	7/10,8/10		
	1.9	8/10,9/10		6
	1.9	7/10,8/10		10
	1.2	3/10,5/10		1
	2.7	7/10,8/10		14
	1	2/10,7/10		16
	2.2	5/10,7/10		4
	1.8	6/10,7/10		7
	2.8	7/10,8/10		
	3.5	6/10,7/10		
	3	7/10,8/10		
	3.2	8/10,7/10		
	2.7			5
	3	7/10,8/10		
	2.8	7/10,8/10		4
	2.6	6/10,7/10		
	2.8	7/10,8/10		
	2.7	5/10,6/10		
	2.9	6/10,7/10		
	3.2	7/10,8/10		
GBS	3	6/10,7/10		3
	2.9	7/10,8/10		
	2.7	7/10,8/10		
	2.8	7/10,8/10		
	3	6/10,7/10		

	3.5	6/10,7/10	2
	3	7/10,8/10	
	2.9	7/10,8/10	
GBS	2.7	6/10,7/10	
	2.8	7/10,8/10	
	2.9	6/10,7/10	
	2.9	7/10,8/10	
	2.8		4
	2.8	7/10,8/10	
	2.5	6/10,7/10	2
	2.7	6/10,7/10	
GBS	2.9	6/10,7/10	5
	2.8	7/10,8/10	
	2.4	7/10,8/10	
	2.2		2
	3.3	3/10,5/10	2
	2.5	5/10,7/10	
	2.6	6/10,7/10	
	2.8	7/10,8/10	
	2.6	6/10,7/10	
	2.7	5/10,6/10	6
	2.8	7/10,8/10	
	2.9	7/10,8/10	
	3	6/10,7/10	3
	3.2	6/10,7/10	
	2.9	7/10,8/10	
	2.8	7/10,8/10	
	2.7	6/10,7/10	
	2.6	7/10,8/10	
	2.6	7/10,8/10	
	2.2		5
	2.1	6/10,7/10	
	2.7	7/10,8/10	
	2.8	6/10,7/10	
	2.4	6/10,7/10	
	3.6	7/10,8/10	
GBS	3	6/10,7/10	
	2.75	7/10,8/10	
	2.8	6/10,7/10	
	2.6	7/10,8/10	
	2.7	8/10,9/10	
	2.8	7/10,8/10	
	2.6	6/10,7/10	
	2.4	7/10,8/10	
	2.2	6/10,7/10	
	3.5	5/10,8/10	2
GBS	2.2	6/10,7/10	
	2.6	7/10,8/10	
	2.8	7/10,8/10	2
	2.9	7/10,8/10	
	2.7	7/10,8/10	4

2.8	6/10,7/10	
2.6	7/10,8/10	
2.4	8/10,9/10	5
2.4	7/10,8/10	
2.5	5/10,6/10	2
2.6	7/10,8/10	
3	6/10,7/10	
3.2	6/10,7/10	
3.3	6/10,7/10	
2.8	7/10,8/10	
2.6	7/10,8/10	
2.7	4/10,6/10	
2.8	6/10,7/10	
2.2	6/10,7/10	
2.5	7/10,8/10	
2.6	7/10,8/10	
2.7	7/10,8/10	
2.75	6/10,7/10	
2.8	7/10,8/10	
3	7/10,8/10	
2.6	6/10,7/10	2
2.5	7/10,8/10	
2.4	7/10,8/10	
2.9	6/10,7/10	6
2.8	7/10,8/10	
2.6	7/10,8/10	
2.7	6/10,7/10	
2.9	5/10,7/10	
2.4	6/10,7/10	
2.9	7/10,8/10	
3.6	5/10,7/10	
2.4	5/10,7/10	